Vol. 892 Number 4

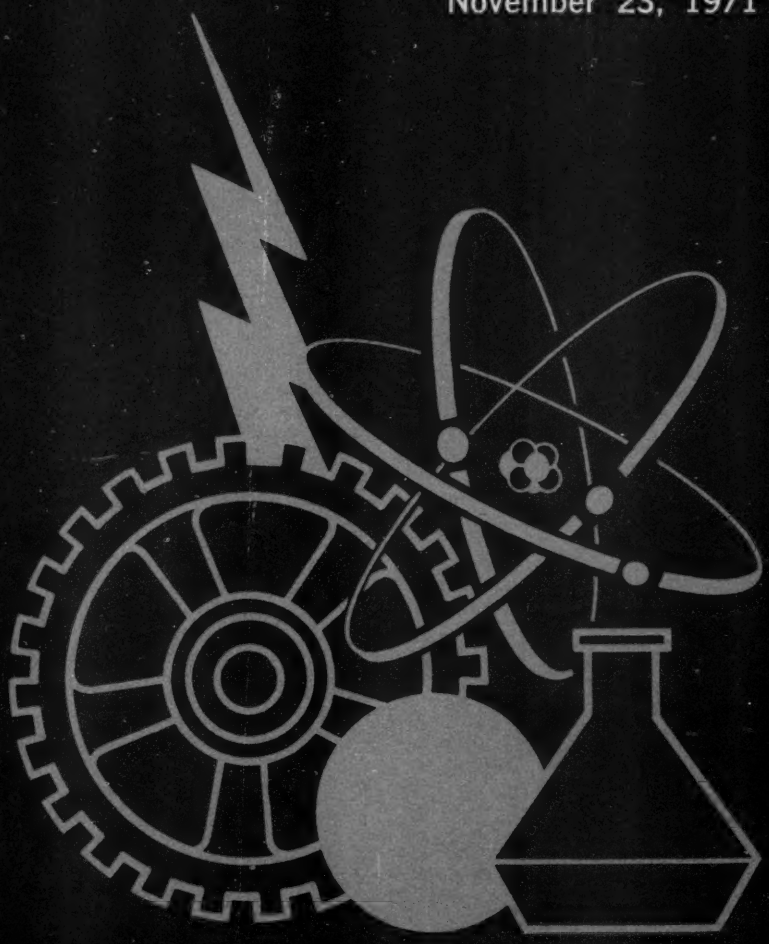
OFFICIAL GAZETTE

of the UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

November 23, 1971



U. S. DEPARTMENT OF COMMERCE

Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

November 23, 1971 Volume 892 Number 4

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PATENT OFFICE NOTICES

TITLE 37—PATENTS, TRADEMARKS, AND COPYRIGHTS

Chapter I—Patent Office, Department of Commerce

PART 1—RULES OF PRACTICE IN PATENT CASES

Drawing Requirements

These rule changes are intended to facilitate the handling and filing of patent application drawings in the Patent Office. Changing the drawing size to 8½ by 14 inches will permit filing of the original drawings in the application file wrapper in the Patent Office. The new size will also permit the use of standard storage equipment, mailing envelopes, and copying equipment.

The revised rules will prohibit the use of names within the "sight" of the drawing, thereby making additional space available for illustration and reducing the number of formal objections and corrections required.

Permanently mounted color photographs in plant patent applications will be accepted. This should result in substantial savings to applicant.

Since no names or other identification will be permitted within the "sight" of the drawing, applicants are expected to use the space above and between the hole locations to identify each sheet of drawings (note § 1.84(1)). This identification may consist of the attorney's name and docket number or the inventor's name and case number and may include the sheet number and the total number of sheets filed (for example, "sheet 2 of 4").

Notice of proposed rule making regarding revision of §§ 1.59, 1.84, 1.85, 1.123, and 1.165 and revocation of §§ 1.82 and 1.87 of Title 37, Code of Federal Regulations, relating to drawing requirements, was published in the Federal Register of January 15, 1971 (36 F.R. 610). Interested persons were given an opportunity to participate in the rule making process through submission of comments in writing and at an oral hearing held on March 23, 1971.

Effective date. This revision shall become effective on the date of its publication in the Federal Register. However, until Jan. 1, 1972, drawings complying with the unrevised rules will also be accepted.

In consideration of the comments received and pursuant to the authority contained in section 6 of the Act of July 19, 1952 (66 Stat. 793; 35 U.S.C. 6), Title 37 of the Code of Federal Regulations is hereby amended as follows:

1. Section 1.59 is revised to read as follows:

§ 1.59 *Papers of complete application not to be returned.*

Papers in a complete application, including the drawings, will not be returned for any purpose whatever. If applicants have not preserved copies of the papers, the Office will furnish copies at the usual cost.

§ 1.82 [*Revoked*]

2. Section 1.82 is revoked.

3. In § 1.84 the introductory text preceding paragraph (a) and paragraph (h) are revoked and paragraphs (a), (b), (c), (j), and (l) are revised to read as follows:

§ 1.84 *Standards for drawings.*

(a) *Paper and ink.* Drawings must be made upon pure white paper of a thickness corresponding to two-ply or three-ply bristol-board. The surface of the paper must be calendered and smooth and of a quality which will permit erasure and correction with India ink. India ink, or its equivalent in quality, must be used for pen drawings to secure perfectly black solid lines. The use of white pigment to cover lines is not acceptable.

(b) *Size of sheet and margins.* The size of a sheet on which a drawing is made must be exactly 8½ by 14 inches. One of the shorter sides of the sheet is regarded as its top. The drawing must include a top margin of 2 inches and bottom and side margins of one-quarter inch from the edges, thereby leaving a "sight" precisely 8 by 11¾ inches. Margin boarder lines are not permitted. All work must be included within the "sight." The sheets may be provided with two ¼-inch-diameter holes having their centerlines spaced eleven-sixteenths inch below the top edge and 2¾ inches apart, said holes being equally spaced from the respective side edges.

(c) *Character of lines.* All drawings must be made with drafting instruments or by a process which will give them satisfactory reproduction characteristics. Every line and letter must be absolutely black and permanent; the weight of all lines and letters must be heavy enough to permit adequate reproduction. This direction applies to all lines however fine, to shading, and to lines representing cut surfaces in sectional views. All lines must be clean, sharp, and solid, and fine or crowded lines should be avoided. Solid black should not be used for sectional or surface shading. Freehand work should be avoided wherever it is possible to do so.

* * * * *

(h) [*Revoked*]

* * * * *

(j) *Arrangement of views.* All views on the same sheet must stand in the same direction and should, if possible, stand so that they can be read with the sheet held in an upright position. If views longer than the width of the sheet are necessary for the clearest illustration of the invention, the sheet may be turned on its side so that the two-inch margin is on the right-hand side. One figure must not be placed upon another or within the outline of another.

* * * * *

(l) *Extraneous matter.* An inventor's, agent's, or attorney's name, signature, stamp, or address, or other extraneous matter, will not be permitted upon the face of a drawing, within or without the margin, except that identifying indicia (attorney's docket number, inventor's name, number of sheets, etc.) should be placed within three-fourths inch of the top edge and between the hole locations defined in paragraph (b) of this section. Authorized security markings may be placed on the drawings provided they be outside the illustrations and are removed when the material is declassified.

* * * * *

4. Section 1.85 is revised to read as follows:

§ 1.85 *Informal drawings.*

The requirements of § 1.84 relating to drawings will be strictly enforced. A drawing not executed in conformity thereto, if suitable for reproduction, may be admitted but in such case the drawing must be corrected or a new one furnished, as required. The necessary corrections or mounting will be made by the Office upon applicant's request or permission and at his expense. (See §§ 1.21 and 1.165.)

§ 1.87 [*Revoked*]

5. Section 1.87 is revoked.

6. In § 1.123, paragraph (a) is revised to read as follows:

§ 1.123 *Amendments to the drawing.*

(a) No change in the drawing may be made except by permission of the Office. Permissible changes in the construction shown in any drawing may be made only by the Office. A sketch in permanent ink showing proposed changes, to become part of the record, must be filed. The paper requesting amendments to the drawing should be separate from other papers.

* * * * *

7. In § 1.165, paragraph (b) is revised to read as follows:

§ 1.165 *Drawings.*

* * * * *

(b) The drawing may be in color and when color is a distinguishing characteristic of the new variety, the drawing must be in color. Two copies of color drawings must be submitted. Color drawings may be made either in permanent water

color or oil, or in lieu thereof may be photographs made by color photography or properly colored on sensitized paper. Permanently mounted color photographs are acceptable. The paper in any case must correspond in size, weight and quality to the paper required for other drawings. See § 1.84. Nonpermanently mounted copies will be correctly mounted at applicant's expense, § 1.21(1).

WILLIAM E. SCHUYLER, JR.,
Commissioner of Patents.

Approved: May 25, 1971.

JAMES H. WAKELIN, JR.,
Assistant Secretary for Science and Technology.

[FR Doc. 71-7504 Filed 5-27-71; 8:49 am]

Published in 36 F.R. 9774; May 28, 1971

United States Adopted Names

List No. 29

March 1, 1971 to June 30, 1971

The following nonproprietary names for the drugs described have been adopted by the USAN Council (the nomenclature committee sponsored by the American Medical Association, the American Pharmaceutical Association, and the United States Pharmacopeial Convention) in cooperation with the interested manufacturers. The designation "United States Adopted Names" (USAN) has been coined to distinguish these formally adopted nonproprietary names from other nonproprietary names. Adoption of such names does not imply endorsement of the products involved by the A.M.A. Council on Drugs, the United States Pharmacopeia or the National Formulary.

Any comments or suggestions should be addressed to Doctor Joseph B. Jerome, Secretary, United States Adopted Names Council, American Medical Association, 535 N. Dearborn St., Chicago, Ill., 60610.

adrenalone: sympathomimetic
alonimid: sedative; hypnotic
baclofen: antispasmodic; muscle relaxant
benapryzine hydrochloride: antiparkinsonism
bleomycin: antineoplastic
cephradine: antibiotic
chymopapain: chemonucleolysis
fenoterol: bronchodilator spasmolytic
flazalone: anti-inflammatory
hetastarch: plasma expander
intriptyline hydrochloride: antidepressant
levomethadyl acetate: narcotic analgesic
maprotiline: antidepressant
mecobalamin: hematopoietic
partricin: antifungal and antiprotozoal antibiotic
*poloxamer 331: direct food additive
*poloxamer 407: direct food additive
rimiterol hydrobromide: bronchodilator
risocaine: local anesthetic
thyroglobulin: thyroid preparation
tobramycin: antibacterial antibiotic

*Poloxamer is a family name selected by the USAN Council for a group of nonionic surfactants of the poly(oxypropylene) poly(oxyethylene) copolymer type. Poloxamer is used in conjunction with a numeric suffix for unique identification of the individual copolymers.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,811,940, N. Marforio, LOOPER CONTROL FOR SEWING MACHINES, **filed** Aug. 13, 1971, D.C., N.D. Ga. (Atlanta), Doc. 15508, *S.p.A. Virginio Rimoldi & Co.* v. *Sunbrand Corporation and Wilcox & Gibbs, Inc.*

3,103,466, A. Farkas, TOPICAL MEDICAMENT INCLUDING POLYURONIDE DERIVED FROM ALOE, **filed** Jan. 22, 1970, D.C., S.D. Fla. (Miami), Doc. 70-92-C-JE, *Alexander Farkas* v. *Aloe Creme Laboratories, Inc.* Final summary judgment, complaint was dismissed without prejudice for failure of plaintiff to prosecute his case, July 20, 1971.

3,109,503, Recknor, Merchant, Miller and Miller, WEIGHING AND MEASURING APPARATUS FOR GRANULAR AND THE LIKE MATERIAL, **filed** Apr. 27, 1971, D.C. Nebr. (Omaha), Doc. C-03522, *Prodx Corporation* v. *Automatic Equipment Manufacturing Co.* Order, patent valid and injunction granted against defendant, July 22, 1971.

3,115,879, D. Kaplan, BODY SUPPORT GARMENT, **filed** May 21, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1219, *Baka Mfg. Co.* v. *The Burrows Co.* Order by stipulation cause dismissed without prejudice, July 2, 1971.

3,116,557, J. R. Trice, Jr., METHOD AND MEANS FOR LAYING SEWER PIPE, **filed** Dec. 3, 1968, D.C. Md. (Baltimore), Doc. 20165, *Alignment Systems, Inc.* (*later changed to Laser Alignment, Inc.*) v. *Canova Bros., Inc. and Anthony W. Canova.* Consent judgment and decree, patent valid, June 30, 1971.

3,119,590, G. J. Eriksson, ADJUSTABLE, COLLAPSIBLE, AND ARTICULATED BRACKET FOR SUPPORTING A CONCRETE FORM FOR A BRIDGE FASCIA, **filed** Aug. 19, 1970, D.C., N.D. Ga. (Atlanta), Doc. C.A. 14072, *Superior Concrete Accessories, Inc.* v. *Shattuck Denn Mining Corporation.* Consent dismissal, July 15, 1971.

3,127,518, C. H. Pruitt, SERVICE VEHICLE ELECTRICAL SUPPLY APPARATUS, **filed** July 6, 1971, D.C., W.D. Okla. (Oklahoma City), Doc. 71-429-C, *Cary H. Pruitt* v. *Vassar Manufacturing Company, and I. D. Vassar.*

3,141,620, K. F. Guggemos, LIGHTING DEVICE, **filed** Sept. 7, 1966, D.C.N.J. (Newark), Doc. C-903-66, *Pfaff and Kendall* v. *Sterner Lighting, Inc.* Order dismissing complaint and counterclaim, July 19, 1971.

3,143,230, C. R. Gollnick, REFUSE VEHICLE, **filed** June 22, 1971, D.C. Wis. (Milwaukee), Doc. 71-C-307, *Leach Co.* v. *The Heil Co.*

3,171,765, Bellinger and Chapdelaine, POWDER COMPOSITION FOR BRIGHT DIPPING ZINC AND CADMIUM, **filed** July 12, 1971, D.C., E.D. Mich. (Detroit), Doc. 36791, *Conversion Chemical Corp.* v. *Aldoa Co.*

3,174,863, A. A. Shoup, SMOKELESS BROILER, **filed** Aug. 12, 1969, D.C., N.D. Ill. (Chicago), Doc. 69c1682, *Marian Shoup* v. *Marshall Field & Co.* Opinion, defendant's motion for summary judgment is granted, May 11, 1971.

3,193,674, T. S. Fleming, EXTENSIBLE LIGHT FIXTURE, **filed** July 1, 1971, D.C., M.D. Fla. (Tampa), Doc. 71-328-C-T, *Theodore Samuel Fleming* v. *William T. Bardouski, doing business as Florida Manufacturing Company.*

3,238,939, F. F. Stubbs, WRIST SUPPORT, **filed** June 18, 1971, D.C., C.D. Calif. (Los Angeles), Doc. 71-1447-R, *Frank F. Stubbs, doing business as Frank Stubbs Co.* v. *Master Industries, Inc.*

3,247,757, W. I. Callaghan, INSPECTION APPARATUS FOR TURNING AND VIEWING COINS, **filed** Sept. 17, 1970, D.C., N.D. Ill. (Chicago), Doc.70 c2292, *Advanced Product Development Corporation et al.* v. *John Plain & Company et al.* Order on stipulation, cause dismissed without prejudice, June 9, 1971.

3,265,103, D. E. Hervey, WOOD VENEER SLICING ELEMENTS TEMPERATURE MAINTENANCE MEANS, **filed** July 23, 1969, D.C., S.D. Ind. (Indianapolis), Doc. IP69-C-349, *The Hervey Foundation, Inc. and David E. Hervey* v. *Capital Machine Co., Inc.* Memorandum of decision, patent is invalid over prior art. No genuine issue of material fact is represented and that summary judgment should be entered for the defendant, July 6, 1971.

3,272,911, Rollins and Fallon, SHIELDED CABLE CONSTRUCTION, **filed** July 9, 1971, D.C., S.D.N.Y., Doc. 71-C-3054, *Ansonia Wire & Cable Company* v. *Texas Instruments, Inc.*

3,275,316, G. V. Cleary, Jr., INSERT FOR NEWSPAPERS, **filed** June 25, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c1512, *Free Standing Stuffer, Inc.* v. *National Broadcasting Company, Inc.* Order, stipulation of dismissal under F.R.C.P. Rule 41(a)(1)(i)(ii) granted, Feb. 4, 1971.

3,291,417, R. W. Peters, WIRE TENSION DEVICE; **3,467,324,** same, STATOR WINDING MACHINE, **filed** May 25, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70-C-283, *Lincoln Tool & Mfg. Co.* v. *Adam Products, Inc., Adam Products & Associates, Inc.* Stipulation of dismissal pursuant to Rule 41(a)(1) of F.R.C.P., June 10, 1971.

3,297,153, L. A. Fattori, SHOCK RESISTANT PLASTIC CONTAINERS WITH SELF-CONTAINED LOCKING MEANS, **filed** July 2, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1600, *Plastic Reel Corporation of America* v. *Film Editing Equipment Corp., also known as Hollywood Film Company.*

3,315,548, Anderson and Connoy, METHOD OF MAKING BAND SAW BLADE, **filed** Mar. 17, 1971, U.S. Ct. of App., 1st Cir. Mass. (Boston), Doc. 71–1082, *Contour Saws, Inc.* v. *L.S. Starrett Company.* The judgment of the District Court as to the invalidity of the patent in suit is affirmed, June 29, 1971.

3,316,294, Feighner and Kapur, DETERGENT ALKYLATE AND THE SULFONATE DERIVATIVE, **file** July 6, 1971, D.C., N.D. Ill. (Chicago), Doc. 71c1631, *Continental Oil Co.* v. *Union Carbide Corp.*

3,377,568. (See 3,397,365.)

3,397,568, Kruse and Baskins, OSCILLATOR WITH SEPARATE VOLTAGE CONTROLS FOR NARROW AND WIDE RANGE TUNING; **3,377,568,** Kruse, Storke and Baskins, VOLTAGE TUNED OSCILLATOR, **filed** Jan. 7, 1971, D.C., N.D. Calif. (San Francisco), Doc. 71–25, *Kruse Electronics* v. *Addington Laboratories, Inc.* **Same, filed** Feb. 8, 1971, D.C. Ariz (Phoenix), Doc. C–71–86 PHX, *Kruse Electronics* v. *Omni Spectra, Inc.*

3,467,324. (See 3,291,417.)

3,518,800, H. G. Tank, FLOORING SYSTEM, **filed** Aug. 10, 1970, D.C., E.D. Wis. (Milwaukee), Doc. 70–C–450, *Connor Forest Industries* v. *Duo-Lok, Inc. et al.* Stipulated final judgment and order, defendants enjoined and defendants' counterclaim dismissed with prejudice, July 12, 1971.

Certificates of Correction for the Week of Nov. 23, 1971

Re. 27,061	3,581,319
3,525,802	3,582,606
3,526,606	3,582,873
3,533,742	3,583,213
3,535,228	3,583,217
3,536,207	3,584,443
3,547,620	3,584,997
3,550,818	3,585,999
3,553,109	3,586,209
3,553,232	3,586,595
3,558,553	3,588,249
3,565,298	3,589,217
3,565,572	3,590,196
3,565,927	3,591,088
3,566,157	3,591,378
3,566,730	3,591,736
3,572,348	3,592,121
3,573,937	3,592,557
3,576,814	3,592,740
3,577,007	3,593,124
3,577,867	3,593,981
3,580,346	3,594,518
3,581,001	3,595,972
3,581,076	

Disclaimers

2,979,381.—*Joseph G. Gottstine, Buffalo,* and *Emery H. Westerland,* Tonawanda, N.Y. PROCESS FOR PRODUCING ZEOLITE X. Patent dated Apr. 11, 1961. Disclaimer filed Aug. 26, 1971, by the assignee, *Union Carbide Corporation.*

Hereby enters this disclaimer to claims 1 through 5 of said patent.

3,223,983.—*Wilbur G. Hespenheide,* Malvern, Pa. RETENTIVE DATA STORE AND MATERIAL. Patent dated Dec. 14, 1965. Disclaimer filed Aug. 9, 1971, by the assignee, *Burroughs Corporation.*

Hereby enters this disclaimer to claims 10 and 11 of said patent.

3,463,028.—*Herbert C. Polidor,* Springfield, Vt. VARIABLE SPEED TRANSMISSION. Patent dated Aug. 26, 1969. Disclaimer filed Aug. 12, 1971, by the assignee, *Simmonds Precision Products, Inc.*

Hereby disclaims the entire 17-year term of said patent.

3,574,273.—*Richard G. Hilbert,* Esmond, R.I. FALSE TWIST SPINDLE AND METHOD OF THREADING THE SAME. Patent dated Apr. 13, 1971. Disclaimer filed Aug. 17, 1971, by the assignee, *Leesona Corporation.*

Hereby enters this disclaimer to claims 1, 2, 4, 8, 11 and 12 of said patent.

3,580,714.—*John R. Lucek,* Pittsfield, Mass. DISCHARGE CONTROL ELEMENT FOR GLASS-MELTING FURNACES. Patent dated May 25, 1971. Disclaimer filed Feb. 19, 1971, by the assignee, *General Electric Company.*

Hereby disclaims the portion of the term of the patent subsequent to Nov. 10, 1987.

PATENT EXAMINING CORPS

R. A. WAHL, Assistant Commissioner
F. H. BRONAUGH, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 2, 1971

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-18-70
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director Heterocyclic; Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	4-24-70
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—L. J. BERCOVITZ, Director Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	9-08-70
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. P. KENT, Director Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	2-19-70
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—W. B. KNIGHT, Director Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-25-70
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Miscellaneous.	3-01-71
SECURITY, GROUP 220—R. L. CAMPBELL, Director Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	5-13-70
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-02-70
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	10-14-70
PHYSICS, GROUP 280—R. L. EVANS, Director Photography; Sound and Lighting; Indicators and Optics; Measuring and Testing; Geometrical Instruments.	8-31-70
DESIGNS, GROUP 290—R. L. CAMPBELL, Director Industrial Arts; Household, Personal and Fine Arts.	10-06-70
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—A. BERLIN, Director Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Railways and Railway Equipment; Brakes; Rigid Flexible and Special Receptacles and Packages.	8-06-70
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders Woodworking; Tools; Cutlery; Jacks.	8-03-70
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	7-31-70
HEAT, POWER AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director Power Plants; Combustion Engines; Fluid Motors; Pumps; Turbines; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Vaporizing; Temperature and Humidity Regulation; Machine Elements; Power Transmission; Fluid Handling; Lubrication; Joint Packing.	11-02-70
CONSTRUCTIONS, SUPPORTS, TEXTILES, CLEANING, GROUP 350—T. J. HICKEY, Director Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Receptacles; Supports; Cabinet Structures; Centrifugal Separations; Cleaning; Coating; Pressing; Agitating; Foods; Textiles; Apparel and Shoes; Sewing Machines; Winding and Reeling.	8-19-70

Expiration of patents: The patents within the range of numbers indicated below expire during November 1971, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,692,987 to 2,695,997, inclusive
Plant Patents ..... Numbers 1,312 to 1,327, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED NOVEMBER 23, 1971

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

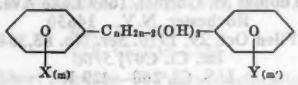
T892,001

BACTERIOSTATIC HALOARALKANOLS

Joseph W. Baker, 421 Greenleaf Drive 63122, and Ignatius Schumacher, 1009 S. Elm 63119, both of St. Louis, Mo.

Filed May 11, 1970, Ser. No. 36,382
Int. Cl. C07c *31/14*
U.S. Cl. 260—618 D
No Drawing. 7 Pages Specification

Certain halogenated compounds represented by the formula



wherein

C_nH_{2n-2} is a saturated hydrocarbon chain;

n represents an integer selected from 2 through 4;

m and m' each represent an integer selected from 1, 2 or 3, provided that sum of $m+m'$ is at least equal to 4; and

X and Y represent chloro or bromo,

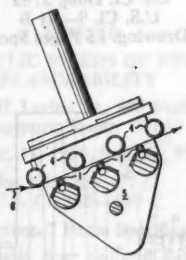
are prepared by reduction of the corresponding diketones. The halogenated aralkanols effectively control the growth of microorganisms.

T892,002

COATING THICKNESS REGULATOR

Larry Eugene Seever, Richmond, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 20, 1970, Ser. No. 38,928
Int. Cl. B05c *11/02, 11/06*
U.S. Cl. 118—63
1 Sheet Drawing. 8 Pages Specification



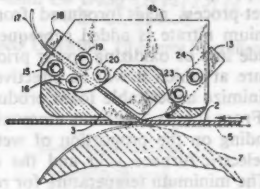
An apparatus for smoothing and regulating the thickness of liquid coatings on a thin substrate comprising at least one wire wound rod, scraping means supporting the rods and tensioning rolls for the substrate.

T892,003

METHOD AND MECHANISM FOR MACHINING HINGES IN PLASTIC SHEETING

Robert G. Peace, Ryers Lane, Matawan, N.J. 07747, and Charles G. Chandler, 100 Walton Court, Kingsport, Tenn.,37663

Filed May 22, 1970, Ser. No. 39,756
Int. Cl. B26d *3/06*
U.S. Cl. 83—5
2 Sheets Drawing. 10 Pages Specification



A method and mechanism for producing hinges in plastic sheeting primarily for the purpose of producing plastic notebooks, book covers, book backs and similar articles. The method involves the use of a machine which has a table or other structure for supporting an endless belt or other means of feeding a plastic sheet into contact with a groove-cutting element at high linear speeds. The cutting element is fixed but adjustably and angularly mounted on the supporting means in such manner as to bring it into skiving contact with and to skive out one or more longitudinal grooves or channels in the sheet. The machine is provided with a cooperating presser foot, also adjustably and angularly mounting on the supporting means in such manner as to bear down on the plastic sheet at the point of cutting. By operating the machine plastic sheets of suitable thickness may have one or more grooves cut therein at a high rate of speed, the portion or strip at the bottom of the cut in each case forming a flexible portion or "hinge," after which the sheet may be cut to any desired size to make a notebook cover, book back or similar article.

T892,004

POLYETHYLENE WAXES AND PREPARATION THEREOF

Hugh John Hagemeyer, Jr., and Reeder Eugene Bissell, both c/o Texas Eastman Co., Box 2068, Longview, Tex. 75601

Continuation of application Ser. No. 679,662, Nov. 1, 1967. This application Aug. 27, 1970, Ser. No. 67,580
Int. Cl. C08h *9/06*
U.S. Cl. 106—271
No Drawing. 18 Pages Specification

Synthetic emulsifiable polyethylene waxes having excellent hardness and softening point characteristics are

produced by the esterification of degraded hydrogenated and oxidized polyethylene with an aliphatic primary alcohol. The emulsifiable wax products are useful in the preparation of liquid emulsion polishes for floors, automobiles, and in the other similar commercial applications.

T892,005
CLARIFICATION OF CONCENTRATED WET-PROCESS PHOSPHORIC ACID

Robin M. Scheib, Rte. 8, Box 223, Florence, Ala. 35630, and Raymond D. Thrasher, Rte. 4, Tuscumbia, Ala. 35674

Filed Sept. 28, 1970, Ser. No. 76,228
Int. Cl. C01b *25/18, 25/22*
U.S. Cl. 23—165
No Drawing. 22 Pages Specification

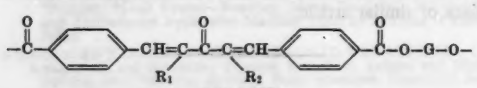
Wet-process acid and mixtures of wet-process acid and electric-furnace acid are clarified by heating to predetermined temperatures and adding ammonium nitrate to said hot acids. The minimum temperature is dictated by (1) absolute minimum temperature at which the oxidizing agent will remove the black coloring, and (2) maximum temperature to which the product will be raised in subsequent processing. The ammonium nitrate acts as an oxidizing agent upon partially decomposed organic materials present in wet-process acids produced from uncalcined ores. Ammonium nitrate is added subsequent to heating (1) to preclude loss of oxidizing power prior to reaching the temperature at which it will be effective, and (2) to effectively minimize undesirable foam production and accumulation. From 0.1 to 2 percent ammonium nitrate is needed depending on the proportion of wet-process acid mixed with electric-furnace acid and the concentration of the acid. The minimum temperature for removal of the black material is about 250° F. and the upper range in final processing to fertilizers is about 400° F. If the acid is subsequently raised to a temperature higher than that at which the ammonium nitrate was initially added, further decomposition of dissolved organic material causes return of the black color.

T892,006
PHOTOSENSITIVE POLYMERS

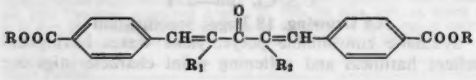
Thomas M. Laakso and Jack L. R. Williams, both of Kodak Park, Rochester, N.Y. 14650

Filed Sept. 29, 1970, Ser. No. 76,597
Int. Cl. G03c *1/68*
U.S. Cl. 96—115
No Drawing. 12 Pages Specification

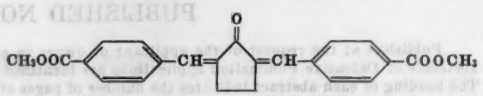
There are disclosed light-sensitive polyester condensation products of the bis(p-carboxybenzylidene)cycloalkanones, or their esters with organic diols containing recurring groups having the formula



wherein R_1 and R_2 are hydrogen atoms, or together represent the atoms necessary to complete a cycloalkanone ring having 5 to 8 carbon atoms in the ring and G is the residue remaining after removal of the hydroxyl groups from an organic diol. These polyesters are obtained by reacting a diol with a dibenzylidenealkanone monomer having the formula



wherein R_1 and R_2 are as defined above and R is a hydrogen atom, a lower alkyl group or an aryl group. An example of such a monomer disclosed is 2,5-di(4-carbomethoxybenzylidene)cyclopentanone having the formula



This monomer is obtained by the reaction of methyl 4-formylbenzoate and cyclopentanone. There is disclosed the preparation of a light-sensitive polyester by the reaction of dimethylisophathalate and 2,5-di(4-carbomethoxybenzylidene)cyclopentanone with 1,4-(β-hydroxyethoxy)cyclohexane. The light-sensitive polyesters are useful in photo-mechanical reproduction processes such as for lithographic purposes or as photo-resists.

T892,007
METHOD FOR PREPARING THALLOUS ETHOXIDE

Thomas M. Gormel, 1669 Lake Ave., Rochester, N.Y. 14650

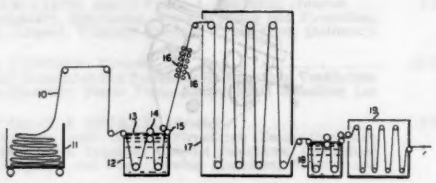
Filed Oct. 29, 1970, Ser. No. 85,304
Int. Cl. C07f *5/00*
U.S. Cl. 260—429 R
No Drawing. 7 Pages Specification

Thallous ethoxide is prepared by the reaction of an alkali metal ethoxide with thallous nitrate or thallous sulfate in ethanol. The alkali metal can be sodium potassium or lithium. The reactants can be dissolved in ethanol and the solution heated at reflux temperature. Alternatively the alkali metal ethoxide can be formed in situ as by adding the alkali metal or its hydroxide to an excess of hot ethanol, the thallous nitrate or sulfate then is added, and the solution is heated at reflux temperature. Time of heating at reflux can be 6 to 48 hours, preferably 24 to 48 hours. The product is then recovered by filtration followed by recovery of product from the filtrate in a separatory funnel.

T892,008
DISPERSE ACID AND VAT OR SULFUR DYEING OF POLYESTER-POLYAMIDE BLEND IN A POLYESTER-CELLULOSE BLEND USING DRY HEAT AND FABRIC SO DYED

William Fred Ibach, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 13, 1970, Ser. No. 89,224
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 B
1 Sheet Drawing. 15 Pages Specification



A dyed fabric which has substantial freedom from frosting and is unusually durable when rendered press-free by resin treatment has two sets of crossing and inter-

locked yarns of which one set protrudes to form a wear surface and the other set is submerged with respect to the wear surface. The protruding set is a blend of polyester and polyamide fibers and the submerged set is a blend of 50–70% by weight polyester fibers with 50–30% cellulosic fibers. Cross-dyeing may be accomplished in a continuous, high-speed single-pass process in which the fabric is impregnated in bath **13** with an aqueous acid dye and an aqueous dispersion of disperse dye, flash dried at **16** to remove at least 25% of the water, exposed for 15 to 90 seconds to dry heat at 205–225° C. in oven **17** to fix the dye, submerged in an aqueous bath **18** for dyeing cellulosic fibers, passed through steamer **19**, and then through conventional finishing treatments.

T892,009

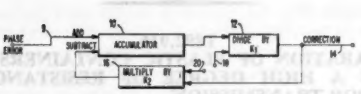
DIGITAL PHASE SCALER

Robert F. Heidecker, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of application Ser. No. 792,232, Jan. 15, 1969. This application Dec. 2, 1970, Ser. No. 94,558

Int. Cl. G06f *7/48*
U.S. Cl. 235—156

1 Sheet Drawing. 11 Pages Specification



A digital phase scaler for weighting the detected phase error between input and output signals in an all digital phase lock loop so that the proper phase and frequency corrections are initiated. The scaler is a digital logic circuit which accumulates the phase errors and decodes a phase correction pulse at a controlled value of the accumulated phase errors. The scaler may also decode a frequency correction pulse at a controlled value of accumulated phase errors. Control points are included to vary the weighting function of the scaler and, hence, the response of the phase lock loop. The scaler is implemented in two basic designs: a binary adder-type scaler, and a binary counter-type scaler.

T892,010

MODACRYLIC FIBERS OF REDUCED FLAMMABILITY

Thomas H. Larins, Jr., 300 Stuffle St., Kingsport, Tenn. 37660

Filed Dec. 11, 1970, Ser. No. 97,354

Int. Cl. C08f *15/22*
U.S. Cl. 260—897 C

No Drawing. 7 Pages Specification

A modacrylic textile fiber reduced flammability comprising

(A) Fiber forming polymeric material comprised of a copolymer of

(1) acrylonitrile and
(2) vinyl chloride or vinylidene chloride

(B) Uniformly dispersed throughout the fiber, based on the weight of the fiber, from about 1 to about 15 weight percent of a metal compound such as antimony oxide, tin oxide, bismuth oxide, arsenic oxide, molybdenum oxide, vanadium oxide, platinum oxide, aluminum oxide, boron oxide, phosphorus oxide, and mixtures thereof.

The fiber forming polymeric material (A) may contain an additional, dissimilar polymer component. Tin oxides such as SnO and SnO_2 are especially useful in this invention. Other metal compounds such as esters can be used. Stannous acetate is particularly useful in this invention. Also disclosed is a process for producing the above fiber wherein the fiber is spun from a spinning dope solution of a modacrylic fiber and a metal compound which is uniformly dispersed throughout the spinning dope solution.

T892,011

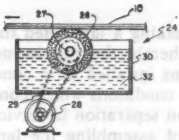
METHOD AND APPARATUS FOR CLEANING PHOTOSENSITIVE ELEMENTS

Gary Boyd Gustafson and Oliver William Gnage, both of 901 Elmgrove Road, Rochester, N.Y. 14650

Filed Dec. 14, 1970, Ser. No. 97,758

Int. Cl. G03g *13/22, 15/22*
U.S. Cl. 134—9

5 Sheets Drawing. 10 Pages Specification



Apparatus for and a method of cleaning a photoconductive surface wherein an open cell or partial open cell sponge material, such as polyurethane, is utilized for cleaning the photoconductive surface. The sponge material is either moved through a cleaning fluid or a cleaning fluid is adapted to flow through the sponge material during the cleaning operation. In one embodiment, the sponge material is wound in a helix on a core. In another embodiment the sponge material is ribbed radially and in a further embodiment the sponge material is ribbed longitudinally. In a still further embodiment the sponge material is an oscillatory pad and in another embodiment is in the form of a paddle wheel.

T892,012

PROCESS FOR MAKING NAPPED SPONGE STRUCTURES

Ronald E. Lovell, Jr., Columbia, Tenn., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

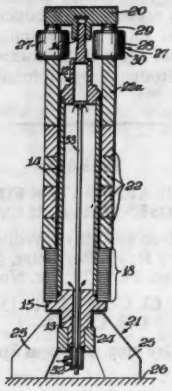
Continuation of abandoned application Ser. No. 803,121, Feb. 27, 1969. This application Jan. 4, 1971, Ser. No. 103,838

Int. Cl. B29d; B29h *7/20*
U.S. Cl. 264—49

No Drawing. 10 Pages Specification

Process for making fibrous regenerated cellulose sponge structures having napped surfaces which comprises spraying the surfaces of the extruded or cast viscose-fiber-salt mixture, immediately prior to regeneration, with water droplets.

T892,013
PROCESS OF MAKING LAMINATED ROLL
Donald William Edwards, 13 Breeze Hill Road, Wilmington, Del. 19807
Filed Jan. 5, 1971, Ser. No. 104,025
Int. Cl. B21d *53/12*; B21h *1/12, 1/14*
U.S. Cl. 29—148.4
2 Sheets Drawing. 24 Pages Specification



A method of making a laminated roll for use in magnetic calenders wherein the roll includes a plurality of annular laminations installed on a concentric core under particular loading conditions which confer a stiffness that prevents lamination separation in service. The method includes the steps of assembling the laminations in abutment with one another concentrically on a metallic core having a stop on one end and applying an axially directed compressive force to the laminations concurrently with a substantially equal but opposed axially directed tensile force to the core. The loading force applied is equal to about twice the level of loading at which it is desired to permanently preload the laminated roll. The laminations after being placed on the core are permanently locked in place under the compressive and tensile forces applied during assembly of the roll.

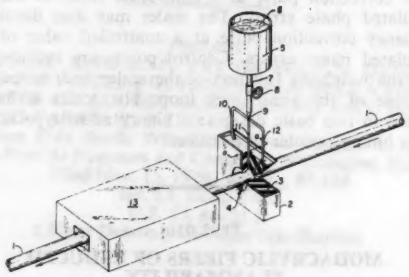
T892,014
METHOD FOR THE PREPARATION OF IMPACT POLYSTYRENES
Ervin E. Schroeder, Akron, and William J. Kern, Barberton, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio
Continuation of application Ser. No. 747,831, July 26, 1968, which is a continuation-in-part of application Ser. No. 661,217, Aug. 17, 1967. This application Jan. 11, 1971, Ser. No. 105,655
Int. Cl. C08f *15/04*
U.S. Cl. 260—880 R
No Drawing. 15 Pages Specification

The production of modified polystyrenes of high impact strength is improved by polymerizing styrene containing a rubbery modifier dissolved therein, which styrene solution has a surprisingly low viscosity. These modifiers are branched rubbery lithium-catalyzed polymers derived from (1) stereolinear homopolymers of butadiene and (2) stereolinear copolymers of (a) butadiene and isoprene and (b) styrene, by treatment with a joining agent. They are substantially gel free. The butadiene homopolymers and the diolefin portions of the copolymers contain less than 12% vinyl structure (1,2-structure as to the polybutadiene or the butadiene portion; and 1,2-structure and 3,4-structure as to any isoprene portion). The molecular weight distribution of the polymers is increased by the joining action.

T892,015
POTASSIUM AMMONIUM POLYPHOSPHATES
Richard C. Sheridan, 105 Terrace, Sheffield, Ala. 35660, and John F. McCullough, 2909 Alexander, Florence, Ala. 35630
Filed Feb. 4, 1971, Ser. No. 112,801
Int. Cl. C01b *25/28*
U.S. Cl. 23—106
No Drawing. 13 Pages Specification

A method for producing long-chain crystalline potassium ammonium polyphosphates with the general formula $K_x(NH_4)_yP_nO_{3n+1}$ where n is greater than about 50, $x+y=n+2$, and y/x ranges from 0.25 to 4.0 by thermal condensation of ammonium ortho-, pyro-, tripoly-, tetrapoly, tetrameta-, or long-chain polyphosphates with potassium orthophosphate, metaphosphate, carbonate, or chloride by heating in a stream of ammonia at temperatures of about 200° C. to 400° C. for a period of about 1 to 16 hours. The strongest lines in the X-ray powder diffraction patterns are given. The product mole ratio K/N is substantially the same as the mole ratio $K/(P-K)$ in the starting material, and the products are high-analysis fertilizers with $N\text{-}P_2O_5\text{-}K_2O$ grades ranging from 2–62–33 to 11–70–10. Small amounts of Cu, Zn, B, Fe, and Mo were incorporated as micronutrients in several preparations.

T892,016
PREPARATION OF PLASTIC CONTAINERS HAVING A HIGH DEGREE OF RESISTANCE TO VAPOR TRANSMISSION
Edward R. Hollander, Jr., P.O. Box 511, Kingsport, Tenn. 37662
Filed Feb. 8, 1971, Ser. No. 113,405
Int. Cl. B44d *11/02, 11/09*
U.S. Cl. 117—94
1 Sheet Drawing. 10 Pages Specification



A high degree of resistance to the transmission of moisture vapor through the walls of a tubular or other form of plastic container is attained by the in-line coating of the outer surface of such containers with polyvinylidene chloride applied in the form of an aqueous emulsion. Coating with the emulsion is attained by (a) passing the plastic container through and in wiping contact with a resilient porous medium, such as a sponge saturated with the emulsion, thereby leaving a coating of the emulsion on the container; and (b) evaporating off the water content of the deposited emulsion by heating the emulsion-coated container in a current of air to leave a very thin, highly moisture-resistant polyvinylidene chloride coating adhered to the outer surface of the container.

T892,017

METHOD OF REDUCING MELT LOSS IN DIE CASTING MAGNESIUM BASE ALLOYS

Stephen C. Erickson and John N. Reding, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Nov. 27, 1970, Ser. No. 116,694
Int. Cl. B22d 27/10
U.S. Cl. 164—72
No Drawing. 7 Pages Specification

The present invention relates to improvements in a method of die casting magnesium base alloys to reduce melt loss. Such improvements comprise employing certain magnesium base alloys and/or lubricants, the latter being controlled in quantity and/or place of application so as to inhibit the formation of a material, presumably manganese-carbon particles, which stabilizes the flux-metal emulsion in the magnesium alloy melt being die cast. It has been discovered that such stabilizer material surrounds or entraps metal globules in the sludge layer of the magnesium alloy melt causing a high melt loss. Such stabilizers can be avoided by the present method by, for example, using a magnesium base alloy with a low manganese content when an oil base lubricant is employed; applying lubricant to the die surface or die plunger rather than to the shot well of the die casting machine; using a non-carbonaceous lubricant; or reducing the amount of lubricant normally used in the die casting operation.

REISSUES

NOVEMBER 23, 1971

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

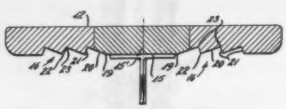
27,235
TRACKING SKI

Richard D. Pope, Jr., and Sanford L. Faught, Winter Haven, Fla., assignors to Cypress Gardens Skis, Inc., Cypress Gardens, Fla.

Original No. 3,395,411, dated Aug. 6, 1968, Ser. No. 593,474, Nov. 10, 1966. Application for reissue Jan. 8, 1970, Ser. No. 10,664

Int. Cl. A63c *15/00*

U.S. Cl. 9—310 A 6 Claims



A ski having a plurality of longitudinally disposed grooves on its running surface, the grooves being spaced from the longitudinal center of the ski and having relatively wide planing surfaces and relatively narrow reaction surfaces disposed approximately at right angles to each other, the reaction surfaces preventing side slipping during use of the ski.

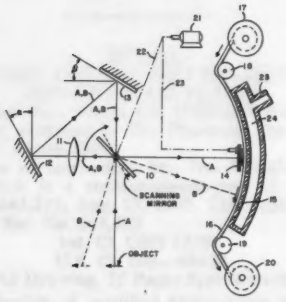
27,236
OPTICAL SYSTEMS FOR PANORAMIC CAMERAS

Ralph H. Wight, Portuguese Bend, Calif., assignor to Fairchild Camera and Instrument Corporation

Original No. 3,416,423, dated Dec. 17, 1968, Ser. No. 564,378, July 11, 1966. Application for reissue Aug. 15, 1969, Ser. No. 853,569

Int. Cl. G03b *37/02*

U.S. Cl. 95—16 6 Claims



An optical system for a panoramic camera which comprises a continuously rotatable plate having mirror surface on both sides which are parallel to the axis of rotation. The light from an object element is reflected from one surface of the rotating mirror through a converging lens to a set of mirrors which redirect the light from the object to the other side of the rotatable mirror. The light from the object is then focussed on an arcuate film-supporting platen.

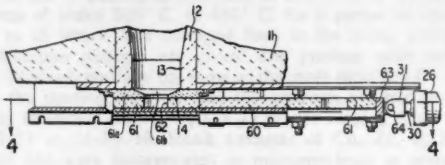
27,237
REFRACTORY CLOSURE MEMBER FOR BOTTOM POUR VESSELS

James T. Shapland, Wilkins Township, Allegheny County, Pa., assignor to United States Steel Corporation

Original No. 3,352,465, dated Nov. 14, 1967, Ser. No. 453,730, May 6, 1965. Application for reissue Nov. 14, 1969, Ser. No. 871,505

Int. Cl. B22d *37/00*

U.S. Cl. 222—512 18 Claims



A closure for the discharge outlet of a bottom-pour vessel for holding molten metal, in the form of a refractory block, is slidably mounted on guide rails carried below the vessel by spring-urged pivoted levers. Flanges at the sides of the block ride on the rails. A hole through the block is brought in register with the outlet by a fluid-pressure cylinder.

27,238
METHOD OF PREPARING SLOW RELEASE FERTILIZER COMPOSITIONS

Robert L. Stansbury, Littleton, Colo., and Charles S. Lynch, Lebanon, and Kamil Sor, Linden, N.J., assignors to Esso Research and Engineering Company

Original No. 3,276,857, dated Oct. 4, 1966, Ser. No. 401,672, Oct. 5, 1964, which is a continuation of Ser. No. 719,794, Apr. 2, 1968. Application for reissue Jan. 16, 1970, Ser. No. 3,534

Int. Cl. C05f *11/00*

U.S. Cl. 71—27 4 Claims

A method for making a slow release extruded compressed pelletized fertilizer composition comprising at least 75% by weight of a suitable fertilizer substance and less than 15% by weight of a water soluble hydrocarbon binder material, said binder and fertilizer being further encapsulated with either microcrystalline wax, asphalt, or a mixture of wax and asphalt so as to provide a coating completely around the outside of the fertilizer substance. Such pellets exhibit an improved leaching rate of the fertilizer substance to the surrounding area over similar commercial materials.

27,239
MEMORY SYSTEM

Werner Ulrich, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, New York, N.Y.

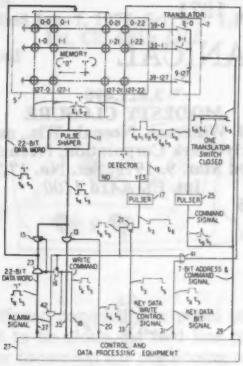
Original No. 3,365,704, dated Jan. 23, 1968, Ser. No. 410,084, Nov. 10, 1964. Application for reissue Nov. 14, 1968, Ser. No. 793,203

Int. Cl. G06f *9/00*

U.S. Cl. 340—172.5 16 Claims

I disclose apparatus for protecting the storage of information in the memory registers of a data processor. Each

register is provided with an extra ("key data") bit which may be set to indicate that the information contained in



the register has a degree of importance such that it is not to be casually over-written by a ordinary order to write new information. Circuitry is provided which is capable of responding to a special control signal for overriding the appearance of a set key data bit. In this way it is possible to alter the information content of the register by program command when it is in fact desired to do so.

27,240

THERAPEUTIC PREPARATION OF IRON

Eric London, Fareham, Hampshire, and George Daniel Twigg, Goostrey, Cheshire, England, by Fisons Pharmaceuticals Limited, Loughborough, Leicestershire, England, assignee, assignors to Fisons Limited, Felixstowe, Suffolk, England

No Drawing. Original No. 2,820,740, dated Jan. 21, 1958, Ser. No. 412,405, Feb. 24, 1954. Reissue No. 24,642, dated Apr. 28, 1959, Ser. No. 765,693, Sept. 22, 1958. This application for reissue Oct. 7, 1969, Ser. No. 871,812

Claims priority, application Great Britain, Feb. 27, 1953,

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **15 Claims**

4. A therapeutic composition for treating iron deficiency anemia comprising a non-toxic, sterile, colloidal aqueous solution of a substantially non-ionic complex of ferric hydroxide with a dextran having an average intrinsic viscosity at 25° C. of about 0.025 to about 0.25, said solution having a pH of about 4 to about 8.5.

PATENTS

GRANTED NOVEMBER 23, 1971

GENERAL AND MECHANICAL

3,621,488
SOUND ATTENUATING HELMET
Robert S. Gales, 1645 Los Altos Road, San Diego, Calif. 92109
Filed July 27, 1970, Ser. No. 58,479
Int. Cl. A42b *3/00*; H04r *1/10*
U.S. Cl. 2—6 **5 Claims**

A helmet having a rigid, outer protective shell lined with a cushioning sound attenuating layer configured to conform to the shape of wearer's head is provided with a pair of cup-shaped recesses, slightly larger than, and laterally spaced from, a wearer's ears. An electroacoustic transducer, hereinafter referred to as an acoustic speaker, carrying an annular cushioning pad is normally maintained in a retracted position within each recess by a deflated, toroidal-shaped sac to permit effortless donning and removal of the helmet. By simply inflating each toroidal-shaped sac, the acoustic speaker and annular cushion are laterally displaced to snugly fit against a wearer's head to shut out airborne noise. By being separated from the helmet by the air filled toroidal-shaped sac, an acoustic decoupling from the helmet results to eliminate helmet transferred noise.

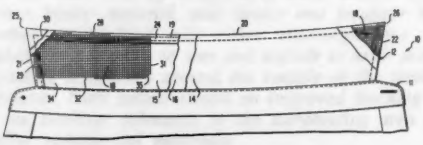
3,621,489
SHIN GUARD
Edmund Keller, Wredestrasse 10, Ludwigshafen (Rhine), Germany
Filed Aug. 11, 1969, Ser. No. 848,860
Claims priority, application Germany, Aug. 31, 1968, G 67 51 308
Int. Cl. A41d *13/06*
U.S. Cl. 2—22 **1 Claim**

The shin is protected against the pressure from the uppers of a mountain climbing or ski boot by an axially slotted, flexible sleeve which fits around the shin and extends from the ankle to several centimeters above the boot. A soft lining is provided in the sleeve.

3,621,490
MODESTY CLOSURE
Barbara J. Willarson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.
Filed Mar. 9, 1970, Ser. No. 17,738
Int. Cl. A41d *1/00*
U.S. Cl. 2—96 **3 Claims**

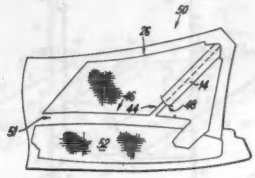
A modesty closure is provided for snap-fastened garments made of nonwoven fabric. An over-panel portion of the garment is folded inwardly to form a flap, and a first snap-fastener member is attached through the over-panel and the flap. An under-panel portion is similarly folded inwardly to form a flap portion, a mating snap-fastener attached to the under-panel and its flap, and the under-panel flap folded outwardly to extend beyond the edge fold of the under-panel portion.

3,621,491
SHIRT COLLAR
John W. Hall, Decatur, John P. Hunter, Jr., Dunwoody, and Jack W. Fields, Vidalia, Ga., assignors to Oxford Industries, Inc., Atlanta, Ga.
Filed May 28, 1970, Ser. No. 41,366
Int. Cl. A41b *3/00, 3/06*
U.S. Cl. 2—131 **8 Claims**



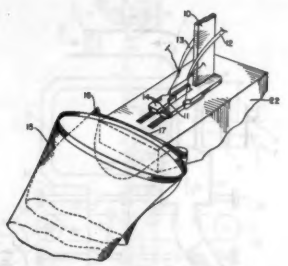
A shirt collar which includes a pair of relatively stiff open weave material inserts anchored at the corners or wings of the collar between the external plies of material by the external top stitch about the edge of the collar. The inserts are of a width shorter than the width of the collar so as to define a fold line in the collar material between the inserts and the shirt collar band. Also, the internal inserts are of a length shorter than one half the length of the collar and each insert has a smooth rounded edge opposite from its collar corner.

3,621,492
MANUFACTURING OF COLLARS
David Samuel Teperson, Johannesburg, Transvaal, Republic of South Africa, assignors to Permastay (Proprietary) Limited, Johannesburg, Transvaal, Republic of South Africa
Filed Jan. 7, 1970, Ser. No. 1,133
Int. Cl. A41b *3/06*
U.S. Cl. 2—143 3 Claims



A collar stiffener comprising a panel of backing material arranged to lie along the fold line of a collar, and having a corner formation for positioning at the wing end of the collar; and a stiffening strip secured to the panel and extending from the corner formation to an inner end stopping short of the fold line edge of the panel to provide a clearance space between the inner end of the strip and the fold line edge of the panel. Also a die for and a method of manufacturing collar stiffeners as described.

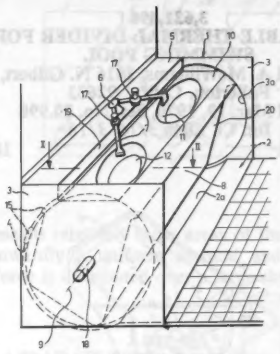
3,621,493
METHOD OF FABRICATING PANTY HOSE
Stanley E. Krueger, High Point, N.C., assignor to Indian Head, Inc., New York, N.Y.
Filed Aug. 22, 1969, Ser. No. 852,164
Int. Cl. A41b *9/04, 11/00*
U.S. Cl. 2—224 R 1 Claim

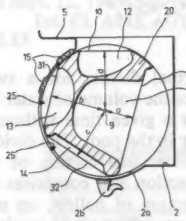


Disclosed are panty hose and a method of fabricating said panty hose wherein two panty hose leg blanks are separately knit. The tubular blanks are then joined to form the panty portion by uninterrupted slitting and simultaneous sewing of the slitted fabric along a predetermined line.

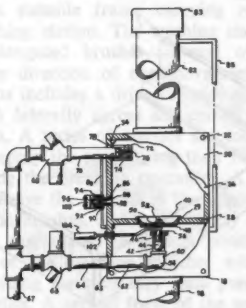
3,621,494
LAVATORY UNIT
Rene Bucher, Stockackerstrasse 17, Reinach, Switzerland
Filed Apr. 7, 1970, Ser. No. 26,342
Claims priority, application Switzerland, Apr. 10, 1969, 5,424/69
Int. Cl. A47k *3/18*
U.S. Cl. 4—4 10 Claims

A lavatory unit comprises an elongate body means of substantially trapezoidal cross-section which is mounted for rotation through 360° about a horizontal longitudinal axis. In each of the principal longitudinal faces of the body means a washing facility is provided. One face contains a bath, a second face contains a pair of wash basins and a third face a child's bath. By rotating the body means the various washing facilities can be brought into use according to whichever principal face is horizontally uppermost. The faces containing the bath and wash basins are respectively at different distances from the axis of rotation so that the bath and basins are presented to the user at a convenient height above the floor.





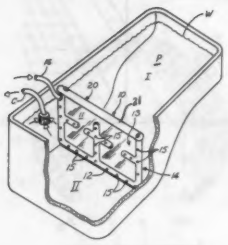
3,621,495
FLUSHING DEVICE
Monte A. Carson, 4512 Bates Drive, Yorba Linda, Calif. 92686
Filed Aug. 14, 1970, Ser. No. 63,881
Int. Cl. E03d *3/04, 3/06, 3/08*
U.S. Cl. 4—31 5 Claims



An electro-hydraulic mechanism for flush toilets is disclosed which is sufficiently compact to permit its installation inside the wall behind the toilet bowl. The mechanism employs a flush valve which is directly linked to a hydraulic actuator without any intervening mechanical

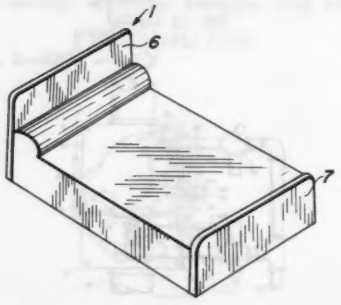
linkage so that the high maintenance and service required for mechanically actuated devices is avoided. The device uses a simple electrical system to actuate the flush valve and a second solenoid valve which is automatically controlled by a level sensing device to refill the water standpipe.

3,621,496
REMOVABLE THERMAL DIVIDER FOR A SWIMMING POOL
Donald A. McWilliams, 1916 N. Gilbert, Fullerton, Calif. 92633
Filed Mar. 19, 1970, Ser. No. 20,998
Int. Cl. E04h *3/16, 3/18*
U.S. Cl. 4—172 **10 Claims**



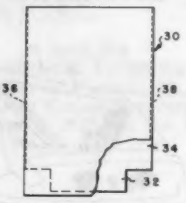
A removable thermal divider for a swimming pool, which serves to reduce the volume of water in a swimming pool to be heated at a given time without reducing the total volume of water in the pool. The divider is a removable wall that separates one section of the swimming pool from another section and comprises an impervious wall with a lower section of ballast, an upper air filled floating section and an intermediate section with tubing that discharges heated water into a divided section of the pool. The wall is rigidified by the floating section and by the pressure of the heated water in the tubing of the intermediate section.

3,621,497
BED FRAMES
Gordon E. Fitzgerald, Apt. 3308, 777 N. Michigan Ave., Chicago, Ill. 44011
Filed Dec. 11, 1969, Ser. No. 884,217
Int. Cl. A47c *19/00*
U.S. Cl. 5—131 **9 Claims**



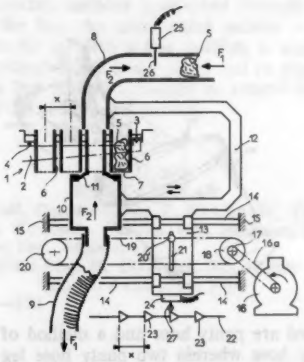
A bed frame which may constitute a separate unit, or an integral part of a box spring, and the like, and embodying supporting members which are positioned to supportingly underlie, at an acute angle, all of the cross slats of a box spring mounted thereon.

3,621,498
BEDCOVER
Elizabeth J. Cooper, Box 152, Mayesville, S.C. 29104
Filed Mar. 21, 1969, Ser. No. 809,167
Int. Cl. A47g *9/00*
U.S. Cl. 5—334 C **2 Claims**



An improved bedcover of the type having a skirt portion adapted to overlie the sides and end of a mattress, and having a flap attached to the underside thereof adapted to be tucked between the mattress and springs at the foot end of the mattress to maintain the bedcover in proper position on a bed during use.

3,621,499
APPARATUS AND METHOD FOR LOADING AND UNLOADING A MULTIPLE CELL MODULE FOR PROCESSING TEXTILE ARTICLES
Maurice Joseph Heliot, 2 bis Rue Passerat, Troyes 10, France
Filed July 8, 1970, Ser. No. 53,258
Claims priority, application France, Feb. 3, 1970, 7003648
Int. Cl. D06f *35/00*
U.S. Cl. 8—150 **12 Claims**

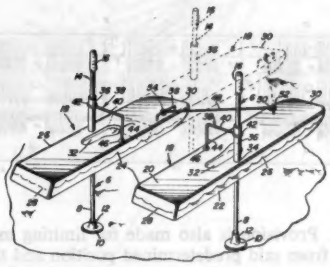


An apparatus for loading or unloading textile articles from the individual cells of a multiple-cell module in which the goods are subjected to a processing under forced fluid flow, said cells having retaining means thereacross to retain an article while permitting fluid flow through the cell, which apparatus include pneumatic means for positioning an article in each cell at a loading station and withdrawing the article from each cell at a unloading station.

3,621,500
WATER WALKING FLOAT-EQUIPPED STILTS
Louis G. Senghas, 39611 Duluth Road, Mount Clemens, Mich. 48043
Filed Apr. 9, 1970, Ser. No. 27,010
Int. Cl. A63c *15/00*
U.S. Cl. 9—310 D **9 Claims**

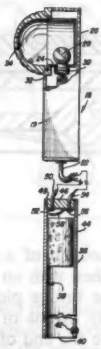
An exercising, amusing, and fun provoking device for aquatic use in shallow water, three to four feet deep, at

a bathing beach shore or in a swimming pool. An innovation which permits the user to shuffle, walk or scamper over the water's surface and characterized by a pair of suitably constructed stilts and a pair of horizontally elongated foot pads which are buoyant. These



pads resemble and function as skis or floating pontoons and have stabilizing guide sleeves which are shiftably adjustable on the stilts, are linked together, and braced and effectually balanced for adequate performing and controllable use.

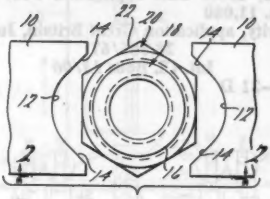
3,621,501
LIFE PRESERVER WITH FLASHING DISTRESS SIGNAL
Johnnie B. Jordan, Silsbee, Tex., assignor of fractional part interest to Carl R. Griffith, Beaumont, Tex.
Filed Oct. 21, 1969, Ser. No. 868,037
Int. Cl. B63c *9/20*
U.S. Cl. 9—313 **4 Claims**



A U-shaped neck embracing shoulder-supported collar-type life preserver has the forward ends of its legs equipped with a pair of depending ballast-like adapters. A median top surface portion of one leg of the life preserver has a built-in flashlight with an exposed amber colored distress signalling lens. The flashlight bulb is automatically flashed on by a float operated switch when the overboard wearer is imperiled in the water.

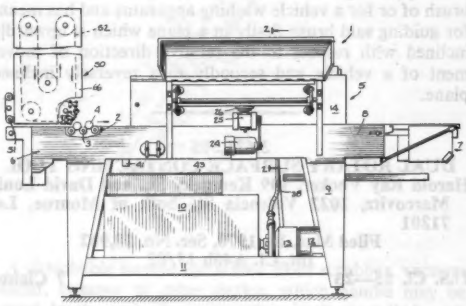
3,621,502
METHOD AND APPARATUS FOR PRODUCING LOCKNUTS
Arthur E. Velthoven, Warren, Mich., assignor to Federal Screw Works, Detroit, Mich.
Filed July 22, 1969, Ser. No. 843,637
Int. Cl. B21d *53/24*; B21k *1/64*; B23g *9/00*
U.S. Cl. 10—72 **6 Claims**

A method and apparatus for manufacturing collar type locknuts in which the nut collar is squeezed between a pair of opposed indentors. The collar engaging indentor surfaces are concave or segmentally cylindrical in shape.



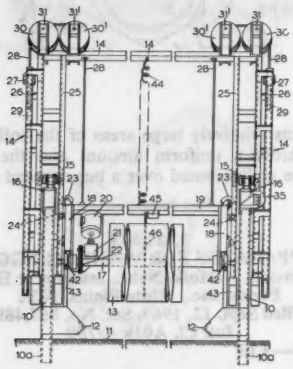
By this means relatively large areas of the collar are displaced inwardly a uniform amount and the frictional locking force is distributed over a large thread area.

3,621,503
APPARATUS FOR WASHING EGGS
Alvin T. Classen, Norfolk, Nebr., assignor to Henningsen Foods, Inc., White Plains, N.Y.
Filed Sept. 12, 1969, Ser. No. 857,489
Int. Cl. A01k *43/00*
U.S. Cl. 15—3.13 **9 Claims**



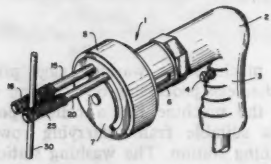
A compact machine for washing eggs prior to egg breaking or other egg processing or handling operations. One form of the machine has a roller-type conveyor mounted on a suitable frame carrying rows of eggs through a washing station. The washing station includes a series of elongated brushes, several of which are mounted in the direction of egg movement. The brush mounting means includes a drive for moving the brushes back and forth laterally across the conveyor in an egg brushing action. A series of nozzles are mounted above the brushes to spray the eggs during their forward movement and during the brushing operation. A drive means is provided to move the nozzles in the opposite direction from that of the brushes. A filtered supply of the washing solution is maintained in a tank positioned in the lower portion of the machine together with a suitable pump for providing the necessary fluid pressure for the spraying operation. A second form of the washer is used for particularly dirty eggs. It includes an additional washing chamber in the form of a tower in which the eggs are moved up and down several times on generally vertical paths during an additional spraying operation whereby an initial cleaning is obtained during an appreciable period which uses only a short horizontal distance on the machine conveyor.

3,621,504
VEHICLE WASHING APPARATUS
Gilbert McMilan, 96 Hardy Mill Road, Harwood Bolton, Lancashire, England
Continuation-in-part of application Ser. No. 738,055, June 18, 1968. This application Feb. 13, 1970, Ser. No. 11,080
Claims priority, application Great Britain, June 22, 1967, 28,866/67
Int. Cl. B60s 13/06
U.S. Cl. 15—21 D 8 Claims



Broadly, according to the invention, the apparatus is for supporting a horizontal, usually counterbalanced, brush of or for a vehicle washing apparatus and has means for guiding said brush firstly in a plane which is upwardly inclined with respect to the relative direction of movement of a vehicle and secondly in a reversely inclined plane.

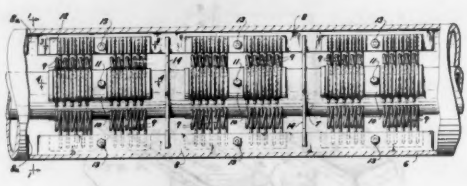
3,621,505
DUAL ROTARY SURFACE CONTACTING TOOL
Harold Ray Vocker, 109 Kentucky St., and David Louis Marcovitz, 2022 Valencia St., both of Monroe, La. 71201
Filed Mar. 12, 1970, Ser. No. 18,962
Int. Cl. A46b 13/02
U.S. Cl. 15—23 7 Claims



A portable tool with a pair of brushes or other rotary surface contacting friction elements is mounted on a portable power source for driving the elements. One of the brushes or elements is bodily movable about the axis of a drive shaft so that operation of the drive shaft through friction in the drive mechanism moves the brush angularly toward the other brush, causing the two elements to contact frictionally an article interposed between them.

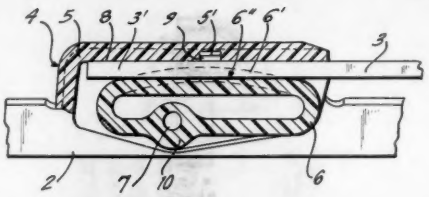
3,621,506
SCRAPER BLADE MOUNTING ARRANGEMENT
Richard M. Armstrong, P.O. Box 566, and Andrew J. Armstrong, R.D. 4, both of West Chester, Pa. 19380
Filed Oct. 14, 1969, Ser. No. 866,218
Int. Cl. F28g 3/12
U.S. Cl. 15—246 14 Claims

Scraper mechanism for use in scraping deposits from the interior surface of a shell including a scraper blade and a plurality of spring assemblies each incorporating a cluster of spring elements for yieldingly holding or suspending the scraper blade in a predetermined position with an edge of the blade in scraping engagement with the



shell wall. Provision is also made for limiting motion of the blade from said predetermined position and therefore for limiting spring deflection. Provision is still further made for preventing appreciable movement of the blade from its predetermined spring suspended position.

3,621,507
DEVICE FOR ATTACHING THE WIPER TO THE WIPER ARM OF A WINDSHIELD WIPER
Eugenio Allaria and Luigi Guzzi, Milan, Italy, assignors to Fabbrica Italiana Magneti Marelli S.p.A., Milan, Italy
Filed Sept. 30, 1969, Ser. No. 862,350
Claims priority, application Italy, Oct. 10, 1968, 22,268/68
Int. Cl. B60s 1/40
U.S. Cl. 15—250.32 3 Claims

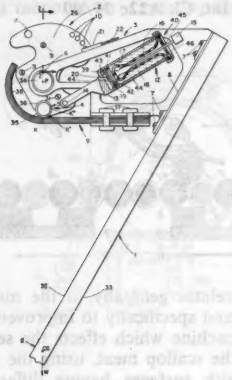


Easy and rapid connection of a wiper to a windshield wiper arm is accomplished with an elastically deformable structure secured to the bridge piece of the wiper blade in oscillating fashion by means of a pin, and having an inner opening to receive the end of the wiper arm and to hold it disengageably with cooperating parts held together by the elastic pressure exerted by the deformable structure.

3,621,508
FORCE GOVERNING DOOR HINGE
Emanuel J. Di Noia, Briar Cliff Manor, and Henry B. Klatte, Yonkers, N.Y., and Theodore R. Breunich, Stamford, Conn., assignors to Universal Oil Products Company, Des Plaines, Ill.
Filed Oct. 5, 1970, Ser. No. 77,943
Int. Cl. E05f 1/12
U.S. Cl. 16—180 6 Claims

A door hinge for governing the force required to rotate a door upwards about an axis having a horizontal component. A negator spring creates a constant force on the door member. The force due to the negator spring aids the moment due to the weight of the door and acts through a moment arm that varies inversely with the moment created by the weight of the door with respect to the axis of rotation. The moment arm through which the

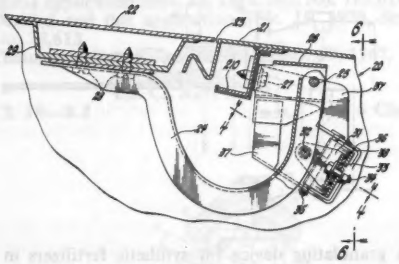
negator spring acts and the moment arm of the weight of the door are directly dependent upon the lateral deviation of the center of gravity of the door from vertical alignment with the axis of rotation.



3,621,509
VEHICLE BODY CLOSURE COUNTERBALANCE

Felix C. Bugnell, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 18, 1969, Ser. No. 850,900
Int. Cl. E05d *15/58;* E05f *1/12*
U.S. Cl. 16—85 5 Claims



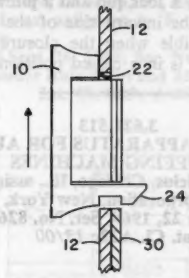
A leaf spring is pivoted intermediate its ends to a hinge arm which swingably mounts a vehicle closure on a vehicle body. The ends of the spring slidably bear on fixed pins mounted on the body. The leaf spring is in a free position when the closure is in open position and is flexed opposite to its free position when the closure is closed to provide an opening spring counterbalance force. The leaf spring may be located parallel with the hinge arm or transverse of the hinge arm. In another embodiment, the leaf spring has one end fixed to the closure and the intermediate portion and the other end thereof respectively slidably bearing on one lobe of an adjustable multilobed cam and an abutment on the body.

3,621,510
LOCKING HANDLE

Henry Rollins, Jr., Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed July 29, 1970, Ser. No. 59,264
Int. Cl. A47b *95/02*
U.S. Cl. 16—114 8 Claims

An integral locking handle which may be attached to a panel or like member without the need for screws, pins or the like. The handle is attached through a slot in the panel, and biasing means yieldably maintains a locking member

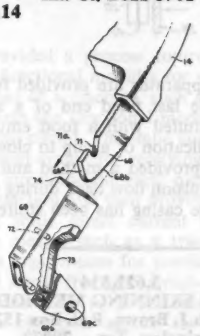


in engagement with a complementary member of a supporting cabinet or the like.

3,621,511
DETACHABLE HANDLE DEVICE

Wilbur-Webb Selley, 130 N. Lake Sybelia Drive, Maitland, Fla. 32751, and Richard H. Schaffer, 854 Edgewater Drive, Orlando, Fla. 32804

Filed Feb. 24, 1969, Ser. No. 801,611
Int. Cl. B62b *3/02*
U.S. Cl. 16—114 5 Claims

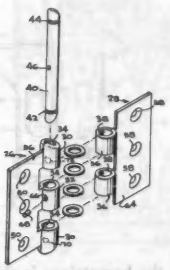


A detachable handle for a tool, floor scrubber, vacuum cleaner, sweeper or other device, which handle may be moved freely and effectively when in its installed position, yet which can be readily removed or thereafter reinstalled without the manipulation of pins or levers, or the installation or removal of screws or other fastening devices.

3,621,512
TAMPER RESISTANT HINGE

Arthur Johnson, Box 293, R.D. 12, Jamestown, N.Y. 14701

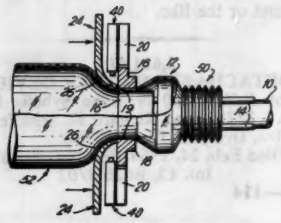
Filed June 12, 1970, Ser. No. 45,642
Int. Cl. E05d *11/00*
U.S. Cl. 16—137 6 Claims



A butt hinge is provided in which a pivot pin extends through interleaved knuckle members with the end of the

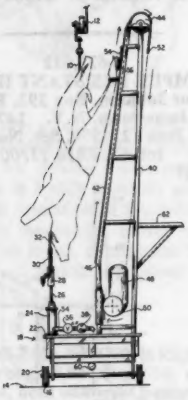
pivot pin and the outer knuckle members forming a continuous smooth surface and with the pivot pin being retained in position by a lock pin and a plurality of swaged lugs positioned on the inward side of the knuckle members to be inaccessible when the closure member supported by the hinge is in a closed position.

3,621,513
METHOD AND APPARATUS FOR AUTOMATIC STUFFING MACHINES
Vytautas Kupcikevicius, Chicago, Ill., assignor to Union Carbide Corporation, New York, N.Y.
Filed May 22, 1969, Ser. No. 826,951
Int. Cl. A22c *13/00*
U.S. Cl. 17—41 **13 Claims**



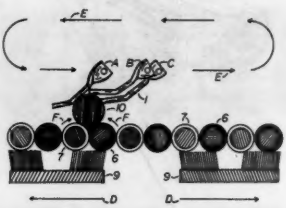
A method and apparatus are provided for constricting and compacting the last filled end of a sausage casing after it has been stuffed with a food emulsion, thereby facilitating the application of a clip to close its last filled end. There is also provided a method and apparatus for preventing food emulsion flow back during the stuffing of, and after, a sausage casing has been stuffed with a food emulsion.

3,621,514
HOG SKINNING METHOD
Kenneth J. Brown, P.O. Box 1539, Plainview, Tex. 79072
Original application Oct. 27, 1969, Ser. No. 869,828. Divided and this application Feb. 23, 1971, Ser. No. 117,971
Int. Cl. A22b *5/16*
U.S. Cl. 17—50 **4 Claims**



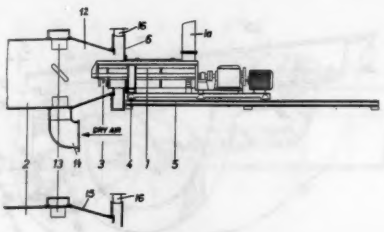
A hog hung by the hamstrings is skinned by cutting the skin from the belly, legs, and head, then holding the head down while pulling the hide upward.

3,621,515
SCALLOP EVISCERATOR
Charles Milton Bunnell, P.O. Box 1695, St. Augustine, Fla. 32084
Filed Dec. 22, 1969, Ser. No. 887,058
Int. Cl. A22c *29/00*
U.S. Cl. 17—53 **4 Claims**



This invention relates generally to the machine-processing of scallops and specifically to improvements in the eviscerator, that machine which effects the separation of the viscera from the scallop meat, using the principle of rotating rollers with surfaces having different surface character and external pressure.

3,621,516
GRANULATING DEVICE FOR SYNTHETIC FERTILIZERS
Wilhelm Wengeler, Bochum-Stiepel, and Lothar Hoffmann, Dortmund, Germany, assignors to Friedrich Uhde GmbH, Dortmund, Germany
Filed June 9, 1969, Ser. No. 831,619
Int. Cl. B29j *1/00*; C05g *3/00*
U.S. Cl. 18—1 A **2 Claims**

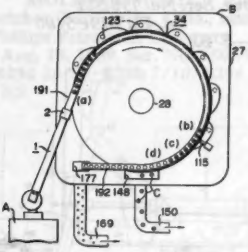


A granulating device for synthetic fertilizers in which the material is fed to the rear portion of a granulator in the form of a horizontally shiftable granulating device, including a power driven worm equipped with paddle-like members, housing for same being in two parts, the lower part of which can be raised or lowered, and the upper part of which is mounted on rollers which travel along horizontal tracks, enabling the granulator to move toward and away from a drying drum which is provided with air inlet openings and having a conical inlet section to which material from the granulator is discharged.

3,621,517
APPARATUS FOR PRODUCING THERMOPLASTIC RESIN MOLDINGS
Isamu Nishikawa and Shigeo Tasaka, Kyoto-shi, Japan, assignors to Toyo Pafuto Company Limited, Kyoto-shi, and Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan
Filed Nov. 4, 1968, Ser. No. 773,099
Claims priority, application Japan, Nov. 8, 1967, 42/94,226; Nov. 13, 1967, 42/95,541
Int. Cl. B29c *3/00*
U.S. Cl. 18—20 C **11 Claims**

An apparatus, of rotating type, for producing thermoplastic synthetic resin moldings automatically and at high

speed comprises introducing the thermoplastic synthetic resin strip material, which has been plasticized in a moldable state, into a molding machine, pressing the strip at a predetermined position between a plurality of upper and lower molds mounted on a rotating base of the molding



machine, molding the material at the mold surfaces of the upper and lower molds during rotation of the rotating base, and cutting the material into a predetermined shape by means of a cutting mechanism provided on the upper and lower molds so as to obtain desired products.

3,621,518

APPARATUS FOR PRODUCING BATCHES OF ELASTOMERIC COMPOSITIONS AT THE HIGHEST TEMPERATURE CONSISTENT WITH THE NATURE OF THE COMPOSITIONS

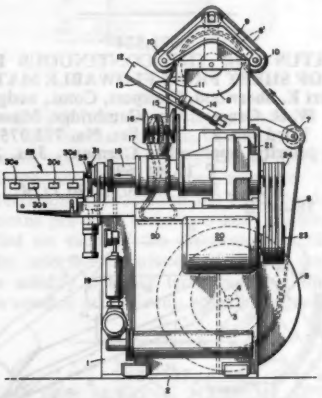
Achille Gallizia, Milan, Italy, assignor to Pirelli S.p.A., Milan, Italy

Original application Sept. 24, 1968, Ser. No. 762,014. Divided and this application Mar. 25, 1970, Ser. No. 25,613

Claims priority, application Italy, Sept. 29, 1967, 21,051/67

Int. Cl. B29c *3/06*

U.S. Cl. 18—2 J **6 Claims**



Charges of elastomeric material of predetermined uniform weight(s) for introduction into molds are produced by heating and forming elastomeric material into an intermediate article of substantially uniform cross section, sensing the length of the article, and cutting the article into individual charges of predetermined length employing photocell actuated apparatus to sense and cut the lengths of the preform.

3,621,519

SOLID-STATE PROCESS CONTROL SYSTEM

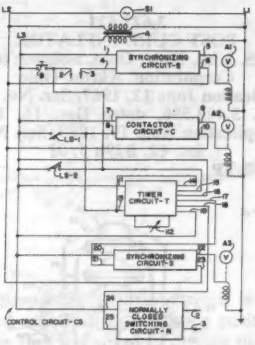
James J. Vandemore, Geneseo, Ill., and Donald E. Henry, Davenport, Iowa, assignors to E. W. Bliss Company, Canton, Ohio

Filed Sept. 26, 1968, Ser. No. 812,486

(Filed under Rule 47(b) and 35 U.S.C. 118)

Int. Cl. B29c *3/06*

U.S. Cl. 18—2 **15 Claims**



There is provided a process control system including a plurality of functional modules for sequencing a plurality of operations of a machine, such as a plastic molding machine, wherein the functional modules include a static electrical control circuit. The static control circuit is comprised of an input circuit for receiving alternating-current signals; static direct-current logic means for performing an electrical function and then providing a direct-current output signal; static direct current to alternating current converter means, such as a triac switching circuit, coupled to the logic means for providing an alternating-current output signal from the direct-current signal; and, actuatable means such as a solenoid controlled valve, coupled to the converter means, for upon energization, providing at least one of the plurality of machine operations.

3,621,520

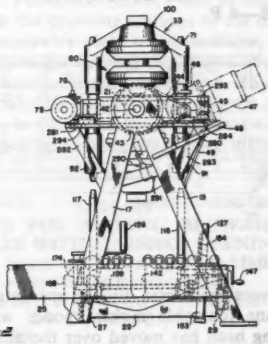
POST CURE INFLATOR

Ernest S. Ulm, Stow, Ohio, assignor to NRM Corporation, Akron, Ohio

Original application June 12, 1967, Ser. No. 645,283, now Patent No. 3,483,596, dated Dec. 16, 1969. Divided and this application Aug. 19, 1969, Ser. No. 851,256

Int. Cl. B29h *5/02*

U.S. Cl. 18—2 TP **17 Claims**



A four tire post cure inflator for a two tire press adapted to receive and inflate each tire but with every other

tire on a separate pair of axially rotating chuck elements, index such tires into a vertical plane for ambient cooling as they are rotating, with yokes for the outer elements being guided for opening and closing partly on fixed and partly on movable guides, and improved chuck lock mechanisms and rotary seals with the former firmly securing the chuck elements together in any relative rotative position thereof.

3,621,521

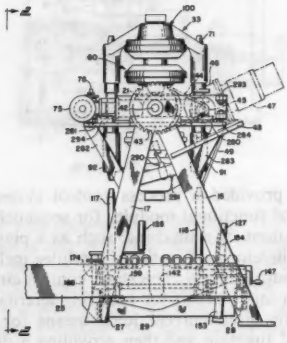
POST CURE INFLATOR

Ernest S. Ulm, Stow, Ohio, assignor to NRM Corporation, Akron, Ohio

Original application June 12, 1967, Ser. No. 645,283, now Patent No. 3,483,596, dated Dec. 16, 1969. Divided and this application Aug. 19, 1969, Ser. No. 851,321

Int. Cl. B29h *5/02*

U.S. Cl. 18—2 TP **17 Claims**



A four tire post cure inflator for a two tire press adapted to receive and inflate each tire but every other tire on a separate pair of axially rotating chuck elements, index such tires into a vertical plane for ambient cooling as they are rotating, with yokes for the outer elements being guided for opening and closing partly on fixed and partly on movable guides, and improved chuck lock mechanisms and rotary seals with the former firmly securing the chuck elements together in any relative rotative position thereof.

3,621,522

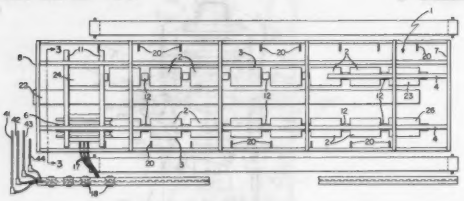
POLYURETHANE FOAM APPARATUS

Edwin S. Woodhall, Cuyahoga Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed June 16, 1969, Ser. No. 833,424

Int. Cl. B29c *5/00*

U.S. Cl. 18—4 P **3 Claims**



This invention relates to an apparatus for pouring polyurethane foamable molded goods wherein at least one pouring head has moved over the molds of one row of one set of molds and then moved over to the second row to permit the second row of molds to be poured in the desired sequence.

3,621,523

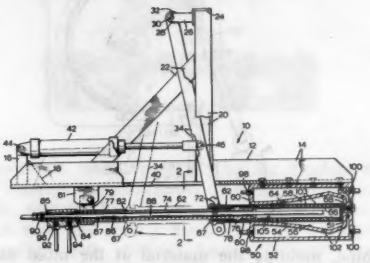
APPARATUS FOR MOLDING PLASTIC ARTICLES

Peter D. J. Dicks, Kitchener, Ontario, William M. Hill, Ayr, Ontario, and James T. Horn, Port Credit, Ontario, Canada, assignors to Cecil Harold Royce Day, Grimsby, Ontario, Canada

Original application Nov. 16, 1967, Ser. No. 683,656, now Patent No. 3,478,781. Divided and this application Jan. 30, 1969, Ser. No. 795,322

Int. Cl. B29c *5/06*

U.S. Cl. 18—5 BJ **7 Claims**



The present invention relates to an apparatus for the manufacture of plastic articles such as bottles from a foamable plastic material such as expandable polystyrene. The apparatus of the present disclosure includes a mould which has a first moulding chamber surrounded by a second moulding chamber and separated therefrom by a movable wall. The movable wall is adapted to be removed from the mould to permit the parison formed within the first mould to be expanded to the contour of the second mould. In the method of operation of the apparatus, the first moulding chamber is charged with a foamable plastic and the foamable plastic is expanded therein to form a tubular parison. After the expansion of the plastic material within the first mould has been substantially completed the movable outer wall of the first mould is withdrawn and the parison is further expanded by blow-moulding to the contour of the second mould. After the blow-moulding has been completed, the mould is split and the moulded article removed.

3,621,524

APPARATUS FOR THE CONTINUOUS PRODUCTION OF SHEET FROM FLOWABLE MATERIAL

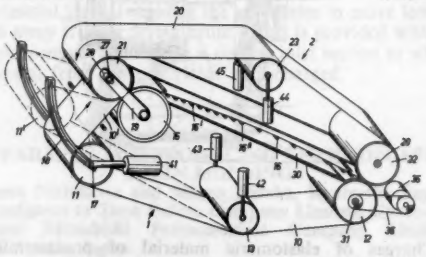
Robert E. Sherwood, Westport, Conn., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Jan. 17, 1969, Ser. No. 792,075

Claims priority, application Germany, Jan. 20, 1968, P 17 04 696.6

Int. Cl. B29c *15/00*; B29d *7/14*

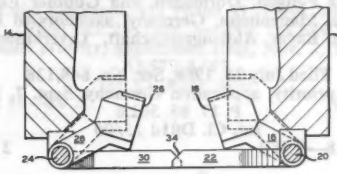
U.S. Cl. 18—4 B **8 Claims**



Apparatus for production of sheet material in which flowable, preferably thermosetting, material is formed into a sheet between adjacent runs of a pair of synchronously movable endless belts each passing over and being tensioned by at least two rollers. Preferably the upper

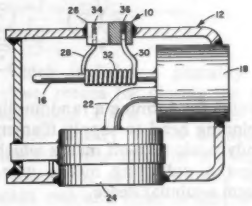
run of the lower belt is outwardly bowed to reduce the possibility of ripples occurring in the belts while they are shaping the flowable material into sheet.

3,621,525
PIVOTAL BOTTOM INSERTS FOR BLOW MOLDING MOLD
Alvin E. Butcher, Bartlesville, Okla., assignor to Phillips Petroleum Company
Filed Aug. 18, 1969, Ser. No. 850,796
Int. Cl. B29d *23/03;* B28b *7/10;* B29c *7/00*
U.S. Cl. 18—5 BR 7 Claims



In a mold for forming articles by blow molding, pivotal inserts are provided in the bottom forming portion of the mold. Preferably, these inserts pivot downward as the mold opens so that bottles with recessed bottoms can be removed without damage.

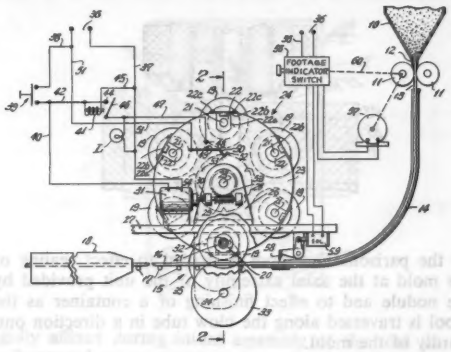
3,621,526
PLUGGING MEANS FOR MELT SYSTEM POLYMER LINES
John H. Bell, Jr., and Charles S. W. King, Charlotte, N.C., assignors to R. H. Bouligny, Inc., Charlotte, N.C.
Filed Sept. 10, 1969, Ser. No. 856,719
Int. Cl. D01d *3/00*
U.S. Cl. 18—8 P 6 Claims



Means is provided for plugging any one of a plurality of polymer distribution conduits upstream of an associated metering pump in a melt system so that the pump may be disconnected and replaced whenever necessary without interrupting operation at the other conduits. The plugging means provided includes a heat exchange structure installed on each of the distribution conduits and arranged for selective circulation of cooling fluid therethrough to solidify polymer temporarily in the related distribution conduit and thereby plug the same whenever desired.

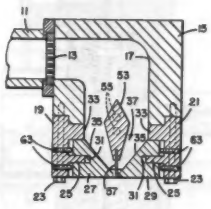
3,621,527
APPARATUS FOR MAKING NARROW SINTERED METAL STRIPS
Martin H. Michalak, 165 Kings Highway, Westport, Conn. 06880
Filed July 16, 1968, Ser. No. 745,194
Int. Cl. B22f *3/18*
U.S. Cl. 18—9 6 Claims

Before sintering, a compacted powdered metal web is slit longitudinally into a plurality of relatively narrow strips by a row of thin high-speed slitting disks spaced laterally on a supporting shaft to provide strips of desired widths which may be all of the same width or of varying widths depending on how the slitting disks are spaced on the shaft. Shafts for other rows of slitting disks which may be variously spaced may be carried squirrel-cage



fashion in a supporting structure which is rotatable to bring a selected row of disks to cutting position in which the shaft of the row is coupled to driving means.

3,621,528
APPARATUS FOR EXTRUDING NET-LIKE FABRICS
Theodore H. Fairbanks, Liverpool, and Robert F. Gillespie, Havertown, Pa., assignors to FMC Corporation, Philadelphia, Pa.
Filed Apr. 20, 1970, Ser. No. 29,843
Int. Cl. B29f *3/00*
U.S. Cl. 18—12 N 6 Claims

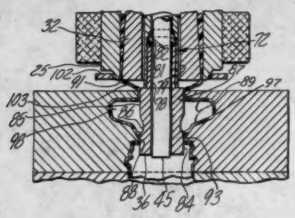


Apparatus for making net-like structures which include a pair of displaceable die-carrying members having sets of cooperating, complementary die-forming orifices along opposing surfaces to which flowable plastic or strand-forming material is delivered and extruded therefrom as shaped streams. Positioned between and in snug but sliding contact with the opposing surfaces of the die-carrying members is a separator plate which includes a plurality of spaced partitions for keeping the shaped streams apart at certain of their locations of crossing. The separator plate is flared laterally in the areas adjacent to the sets of orifices so as to direct the shaped streams along diverging paths as they issue from the sets of orifices.

3,621,529
APPARATUS FOR MAKING BLOW-MOLDED ARTICLES WITH FINISHED OPENINGS
Lloyd Kovacs, Somerset, N.J., assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Dec. 5, 1969, Ser. No. 882,425
Int. Cl. B29d *23/03*
U.S. Cl. 18—5 BS 7 Claims

Blow-molded articles are initially formed with a disposable hollow nodule severed from the neck of the container along the periphery of a finished opening at the

end of the container neck. The apparatus for blow molding the container and the nodule as a unit includes a complementary mold and a trimming and sealing spool mounted on a blow pipe interiorly of a region traversed



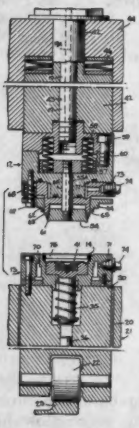
by the parison. The spool is shaped to effect sealing of the mold at the axial extremity of the unit provided by the nodule and to effect finishing of a container as the spool is traversed along the blow tube in a direction outwardly of the mold.

3,621,530

MEANS FOR MOLDING CLOSURE CAP GASKETS

Orin L. Pflieger and Daniel D. Acton, Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Filed June 30, 1969, Ser. No. 837,709
Int. Cl. B29c *17/00*
U.S. Cl. 18—5 RR **6 Claims**



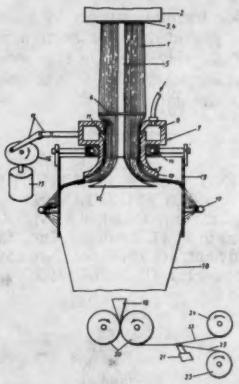
A machine is disclosed for shaping or molding sealing gaskets within hollow closure cap shells. Closure cap shells having a hollow or cup-like form first have a predetermined amount of gasket material inserted in them either in the form of a cut-ring or as a flowed-in ring. These closure shells are fed into the machine which shapes or molds the gasket material into precisely formed cap gaskets. The machine has a rotating turret mounting a number of molding heads or spindles at its periphery. Each of these heads includes a lower spindle for receiving the closure shells with their hollow gasket receiving interior uppermost. Gasket shaping tools in each head are mounted on an upper spindle. The lower spindle is moved upwardly forcing the closure shell and its included gasket material into engagement with the gasket shaping tools in the upper spindle. The upward movement of the lower spindle is provided by an inclined cam having a slowly rising molding portion which moves the gasket material smoothly and progressively into molding engagement with the upper spindle tools with great force. Adjustable pressure determining members are included in the upper spindle to give a precise control of the final molding force applied by the lower spindle. During the molding operation, the upper and lower spindles are cooled by a circulating temperature controlling fluid which keeps these molds at a relatively low temperature as contrasted with the elevated temperature of the gasket material as has been heated prior to the feeding of the caps into the molding machine.

3,621,531

APPARATUS FOR THE CONTINUOUS PRODUCTION OF A RANDOM-FILAMENT FLEECE

Karl-Heinz Feltgen, Dormagen, and Gunther Espanion, Cologne, Mauenheim, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 28, 1969, Ser. No. 848,138
Claims priority, application Germany, Sept. 7, 1968, P 17 85 302.0
Int. Cl. D01d *23/00*
U.S. Cl. 18—8 WB **2 Claims**



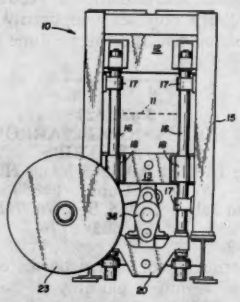
An apparatus for forming a random-filament fleece and having a spinning head to supply filaments to a trumpet-shaped aerodynamic take-off means which throws the filaments against a collecting means where the filaments adhere to form a tubular fleece.

3,621,532

THERMOFORMER

Kurt G. Dahlberg, Pittsford, N.Y., assignor to Thermo Trim, Inc., East Rochester, N.Y.

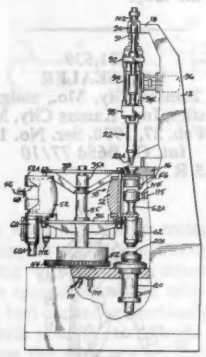
Filed May 15, 1969, Ser. No. 824,978
Int. Cl. B29c *17/00;* **B30b** *1/14*
U.S. Cl. 18—19 **13 Claims**



A thermoforming machine for molding products from thermoplastic sheet stock includes a shaft below the sheet

stock plane and toggle lever sets each having one toggle lever fixed to the shaft and the other fixed to a movable part. One toggle lever set is connected to the lower mold platen and the other to vertically movable guides that guide the lower mold platen and carry the upper mold platen. The toggles are oppositely oriented and are operated by reciprocally turning the shaft to draw the mold platens together at the sheet plane on one stroke and separate them on the other stroke.

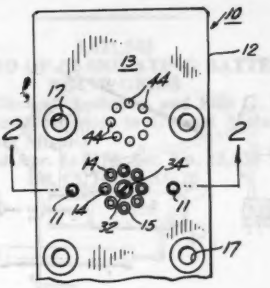
3,621,533
APPARATUS FOR PRODUCING RUBBER AND LIKE MOLDED ARTICLES
Luigi Bertrandi, Via Peano 11, Turin, Italy
Filed Oct. 28, 1968, Ser. No. 771,059
Claims priority, application Italy, Nov. 2, 1967, 53,577-A/67
Int. Cl. B29c *3/00*
U.S. Cl. 18—20 H **10 Claims**



An apparatus which includes a plurality of molds which open and close, means for closing the molds, for holding them closed under a first pressure or force, and for moving them into registry with a clamping station where a second, much greater force or pressure may be applied, while a charge of article-forming material is forced into the molds, one at a time, as they are brought into position, and means for maintaining the lower force on the molds after the material has been introduced into the molds, whereby only one high force cylinder assembly is needed for a plurality of molds, since each mold requires a high force to remain closed only during a short period within a molding and vulcanizing cycle. The process is particularly described with respect to a hydraulically operated machine in which molding is by way of injection of rubber into mold units mounted on a turntable so as to permit free but limited axial movement, to simplify operation of the clamping and high force-applying steps, and continuous operation.

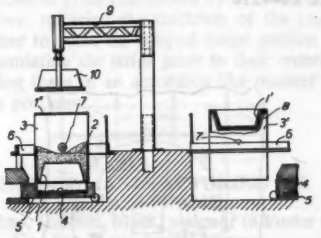
3,621,534
TOOL SET ASSEMBLY FOR POWDER COMPACTING PRESS AND THE LIKE
Georges D. De Troyer, Detroit, Mich., assignor to Wolverine Pentronix, Inc., Lincoln Park, Mich.
Filed Sept. 29, 1969, Ser. No. 861,672
Int. Cl. B30b *11/02*
U.S. Cl. 18—16.5 **21 Claims**

A unitary tool set assembly for mounting in a powder compacting press, having a die plate provided with one or a plurality of die cavities and to which is mounted a housing extending below the die plate and containing one or a plurality of punches individually disposed in each die cavity. A stationary core rod is disposed in each punch and the punches are collectively actuated for reciprocation by a common punch holder to which they are



rigidly affixed during initial assembly of the tool set in an improved manner such as to maintain their accurate alignment relative to the die cavities and the core rods.

3,621,535
APPARATUS FOR PRODUCING ARTICLES FROM PLASTIC MATERIAL
Lars Ringdal, Montebelloveien 15, Oslo 3, Norway
Filed Oct. 8, 1969, Ser. No. 864,636
Claims priority, application Norway, Nov. 4, 1968, 4,365/68
Int. Cl. B29c *5/00, 5/04*
U.S. Cl. 18—26 R **9 Claims**

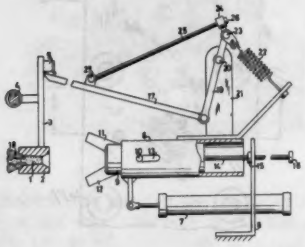


Apparatus for moulding articles from plastic materials comprising a container holding a body of plastic material and having a plurality of openings for receiving moulds on which the articles are to be formed, said container being rotatable to move one of the moulds so that it is at the bottom of the container with its mould surface facing into the container and covered with the plastic material, and means for heating said one mould to form a plastic article thereon.

3,621,536
APPARATUS FOR REMOVING A PLUG OF MOLDING MATERIAL FROM THE INJECTION PASSAGE OF A MOLD
Germain D. Remmery, St. Amandsberg, Belgium, assignor to ACEC Ateliers de Constructions Electriques de Charlerol
Filed Nov. 13, 1969, Ser. No. 876,233
Claims priority, application Belgium, Nov. 14, 1968, 66,072
Int. Cl. B29f *1/00*
U.S. Cl. 18—30 NR **2 Claims**

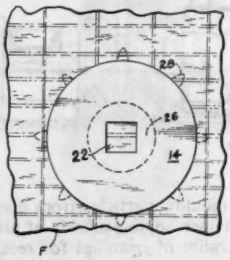
Apparatus for removing a plug of molding material from the injection passage of a mold including a slider displaceable in rectilinear movement toward and away from

the plug and a piston slidably mounted in the slider so as also to be displaceable toward and away from the plug. The piston is provided with a pair of jaws articulated at one end to pivot about an axis transverse to the direction of movement of the piston and slider. The piston has



a rod provided with a pair of thrust members arranged on either side of a stationary frame whereby to limit the displacement of the piston. A cutout is formed on the wall of the slider to allow opening and closing of the jaws while a spring biases the jaws toward open position.

3,621,537
FASTENER FOR NON-WOVEN FABRICS
Hugh Hill Andrews, Cheshire, Kenneth W. Flisher, Middlebury, and Donald O. Taylor, Waterbury, Conn., assignors to Scovill Manufacturing Company, Waterbury, Conn.
Filed Dec. 10, 1969, Ser. No. 883,693
Int. Cl. A44b *17/00*
U.S. Cl. 24—216 **3 Claims**



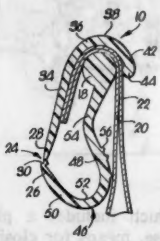
A plastic snap fastener for non-woven fabrics having thin flexible base flanges and integral setting prongs which in use are rolled outward or collapsed to clamp the fastener parts to the scrim of the non-woven fabric.

3,621,538
OVERLAPPED LOOP TOWEL CLAMP
Charles A. Nickason, 1581 Rupert St., Vancouver 6, British Columbia, Canada
Filed Aug. 30, 1968, Ser. No. 756,545
Int. Cl. A44b *21/00*
U.S. Cl. 29—263 **20 Claims**

A clamp for holding a towel, wash cloth, or the like, on a wall which includes a loop member and a clamp member slidably mounted thereon wherein the clamping member has two parts, one being located on each of opposite sides of the loop so that when a cloth is threaded through the two members and the loop it is clamped by being pressed against the loop by each of the two members upon the application of a force on the cloth. Movement of the two parts of the slider is permitted toward and away from the loop by torsion bar members spaced from the portion

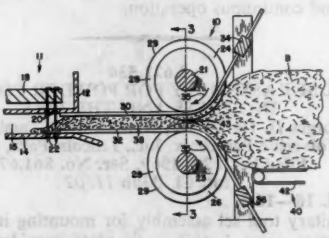
of the slider which engages the cloth. The torsion bars are also positioned so as to limit sliding movement of the slider relative to the loop.

3,621,539
BAG SEALER
Ralph L. Ayers, Kansas City, Mo., assignor to Variform Plastics, Inc., Kansas City, Mo.
Filed Feb. 27, 1970, Ser. No. 15,005
Int. Cl. B65d *77/10*
U.S. Cl. 24—30.5 R **5 Claims**



A bag sealer having a pair of hingedly interconnected segments, one of said segments carrying a locking head and the other segment defining a pocket for receiving said locking head whereby to retain in juxtaposed, sealed relationship the flexible walls of a bag disposed therebetween.

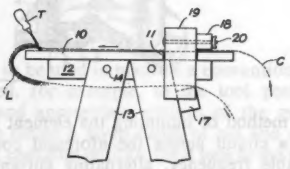
3,621,540
FIBROUS BATT FEEDING MECHANISM
Frank Baxter Morrill, North Adams, Mass., assignor to Crompton & Knowles Corporation, Worcester, Mass.
Filed Nov. 3, 1969, Ser. No. 873,336
Int. Cl. D04h *18/00*
U.S. Cl. 28—4 R **5 Claims**



A mechanism for feeding a fibrous textile batt to a processing area such as a needling machine. The feed mechanism includes a pair of upper and lower feed rolls,

each of which have spaced circumferential grooves; grooves of one roll being aligned with grooves of the other roll. A plurality of upper and lower elongated guide elements which extend through the grooves in the upper and lower feed rolls, respectively, from the entering side of the rolls, between the rolls and up to the batt processing area. The circumferential areas of the rolls, which lie between the grooves, compress the batt and advance it through a channel formed by the guide elements which maintain the batt in a compressed state up to the processing area.

3,621,541
HOOKED RUG WORKTABLE
Dwight G. Watkins, 110 Forest Garden Drive, Youngstown, Ohio 44512
Filed May 19, 1970, Ser. No. 38,770
Int. Cl. D06c *3/08*
U.S. Cl. 28—15 **5 Claims**

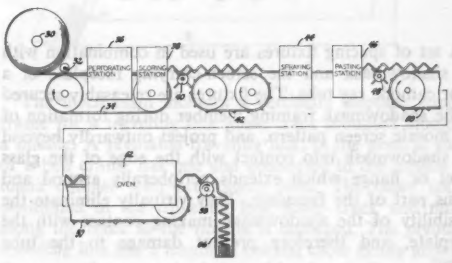


A hooked rug worktable has a rectangular table top and a pair of support assemblies mounted beneath the ends thereof along with an inner connecting cross bar or baffle which is spaced below the table top. A longitudinally extending bail carried on vertically movable members registrable with notches in the ends of the table top is positioned above the table top so that the rug canvas on which the hooked rug is being formed can be passed across the table top beneath the bail and backwardly and under the table top and over the cross bar or baffle, the arrangement being such that the rug canvas is held under desirable tension facilitating the formation of the hooked rug.

3,621,542
PRESSURIZED SUIT FABRIC CONVOLUTE MANIPULATION THROUGH MATERIAL DISTRIBUTION
Douglas E. Getchell, Windsor Locks, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.
Filed Dec. 20, 1968, Ser. No. 785,693
Int. Cl. A41d *13/00;* **A63c** *11/04*
U.S. Cl. 28—72 **4 Claims**

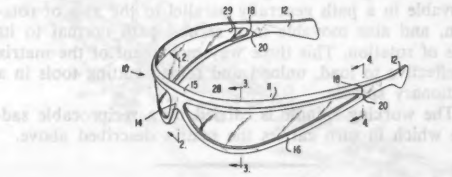
Root cords in fabric convolutes are displaced relative to the general center line of restraint fabric material of which a generally tubular section of convolutes is comprised in order to stabilize or displace given convolutes with respect to other convolutes in the section. Further, the amount of fabric adjacent to various incremental lengths of a root cord is adjusted differentially so as to alter the characteristics of one or more convolutes formed thereby. The invention is illustrated in terms of overcoming adverse effects of repetitive bending of joints, and in terms of overcoming a tendency toward cutting in as a result of wedge-shaped convolutes.

3,621,543
METHOD OF FABRICATING BATTERY PLATE GRIDS
Norman L. Willmann, Anderson, and Ellis G. Wheadon, Yorktown, Ind., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 6, 1970, Ser. No. 25,630
Int. Cl. H01m *35/26*
U.S. Cl. 29—2 **3 Claims**



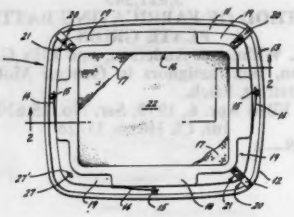
A method is disclosed for fabricating battery plate grids from a continuously moving strip of material. One form of the method includes the steps of punching a plastic strip into successive grids interlinked by at least one connecting member, reducing the thickness of the interconnecting member to form an integral hinge portion thereon, and accumulating the strips prior to their entering an oven by folding them in an accordion-like manner at the integral hinge portions.

3,621,544
METHOD OF MANUFACTURING AN EYEGLASS FRAME
Albert C. Petitto, Hudson, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Original application Sept. 6, 1966, Ser. No. 577,321. Divided and this application Sept. 2, 1969, Ser. No. 854,421
Int. Cl. B28b *1/24*
U.S. Cl. 29—20 **3 Claims**



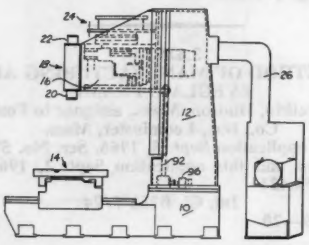
A method of forming a lens surround eyeglass frame by molding the frame as a unitary structure in a cavity between a pair of cooperating mold blocks, the cavity being oriented in an angular position relative to the separation direction of the mold blocks so that each surface thereof is freely retractable over corresponding eyeglass frame surfaces molded in the cavity during separation of the blocks.

3,621,545
CATHODE RAY TUBE MANUFACTURE
Bruno F. Puntel, North Wales, Pa., assignor to Philco-Ford Corporation, Philadelphia, Pa.
Filed June 22, 1970, Ser. No. 48,198
Int. Cl. H01j 9/06, 9/10, 9/46
U.S. Cl. 29—25.19 8 Claims



A set of spacing fixtures are used in combination with the shadowmask and the screen-carrying faceplate of a color cathode ray tube. The fixtures are releasably secured to the shadowmask framing member during formation of the mosaic screen pattern, and project outwardly beyond the shadowmask into contact with the edge of the glass panel or flange which extends peripherally around and forms part of the faceplate. They virtually eliminate the possibility of the shadowmask making contact with the faceplate, and therefore prevent damage to the tube screen.

3,621,546
TOOL CHANGER FOR UNIVERSAL MACHINE TOOL
James A. Wilmer, Fort Thomas, and John S. Reynolds, Park Hills, Ky., assignors to The Notch & Merryweather Machinery Co., Cleveland, Ohio
Filed May 8, 1969, Ser. No. 823,045
Int. Cl. B23g 3/157
U.S. Cl. 29—26 8 Claims

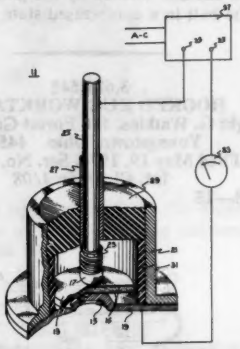


Tool changer including a rotatable tool holding matrix movable in a path generally parallel to the axis of rotation, and also movable in a second path normal to its axis of rotation. This three way movement of the matrix is effective to load, unload and reload cutting tools in a stationary spindle.

The working spindle is carried by a reciprocable saddle which in turn carries the matrix described above.

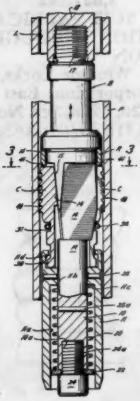
3,621,547
METHOD FOR OPTIMUM MOUNTING OF PIEZOELECTRIC CERAMIC FILTER ELEMENTS
Carl T. Durham, Jr., Roanoke, Va., assignor to General Electric Company
Filed May 16, 1969, Ser. No. 825,279
Int. Cl. B01j 17/00
U.S. Cl. 29—25.35 4 Claims

An apparatus and method of mounting a piezoelectric ceramic element to provide optimum electrical/mechanical functioning, the apparatus including a receptacle having a fixed contact and a movable contact between which the ceramic element is clamped, the clamping force being variable via the movable contact, which in one form is a sleeve with a resiliently coupled plunger, slidably adjustable in the sleeve and bearing against the element.



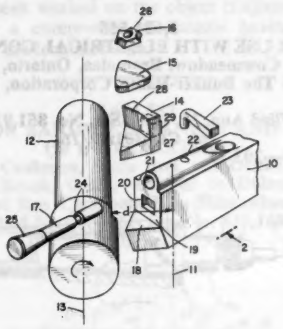
The method of mounting the element consists of providing a circuit across the aforesaid contacts including a variable frequency, alternating current source set to the operating, or resonant, frequency of the element and a milliammeter, varying the movable contact to change the clamping force, and fixing the movable contact from further variation when a maximum deflection of the milliammeter is obtained.

3,621,548
BROACH FOR WELL PIPE
John C. Kinley, 5815 Royalton St., Houston, Tex. 77036, and Clifford E. Anderson, Houston, Tex.; said Anderson assignor to said Kinley
Filed Feb. 2, 1970, Ser. No. 7,512
Int. Cl. B26d 1/04
U.S. Cl. 29—95.1 11 Claims



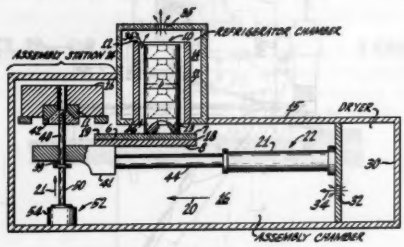
A broach for cutting a portion of the inside surface of a well pipe or an object extending into a well pipe, wherein the broach is adapted to be lowered through a restriction in the pipe, thereafter expanded below the restriction for effecting the enlargement, and then passed upwardly through the restriction for withdrawal from the pipe.

3,621,549
CUTTING TOOL INSERT ASSEMBLY
James O. Billups, 1601 Oak Ave., Manhattan Beach, Calif. 90266
Filed Mar. 6, 1970, Ser. No. 17,150
Int. Cl. B26d 1/00
U.S. Cl. 29—96 9 Claims



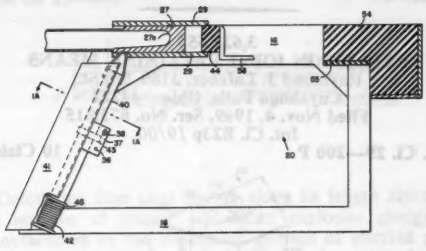
A tool holder to be used in place of a conventional tool holder is secured, for example, to the tool post of a machine lathe and appropriate settings of the machine may be made to define a given depth of cut and desired elevational work engaging position for a tool in the holder. A plurality of tool adapter members each having a seating surface defining a desired rake angle are provided together with a plurality of cutting tools each having different cutting nose radii, any one of the tools being receivable on any one of the adapter members. A selected tool and adapter member in accord with the desired nose radii of cut and rake angle are secured in the holder by a cooperating hold down means. The adapter members and cutting tools are dimensioned such that any one adapter member and any one cutting tool may be held in the tool holder to provide a desired rake angle and nose radius combination without changing the depth of cut, elevational engagement of the tool with the work, or any of the machine settings locating the tool holder. A cooperating chip breaker member designed for use with the cutting tool is also provided in the preferred embodiment.

3,621,550
SHRINK FIT ASSEMBLY PROCESS
Harry Elliott Colestock, Ann Arbor, Mich., assignor to International Telephone and Telegraph Corporation
Filed June 15, 1970, Ser. No. 46,408
Int. Cl. B21k 1/20; B23p 11/02, 13/00
U.S. Cl. 29—156.7 A 9 Claims



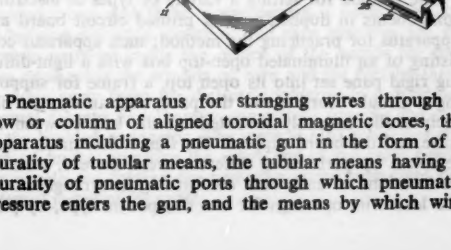
A method for assembling two piece parts using the shrink fit technique includes providing cooling and assembly chambers for the piece parts, and drying the chambers to prevent formation of condensation and frost which might otherwise interfere with the assembly sequence.

3,621,551
RETRACTOR AND CAPTURE MECHANISM FOR A MISSILE ANTENNA COUPLER
Robert N. Strommer, Venice, Calif., assignor to the United States of America as represented by the Secretary of the Army
Filed Jan. 22, 1970, Ser. No. 5,070
Int. Cl. B23p 19/00
U.S. Cl. 29—200 D 4 Claims



The mechanism includes a vertically disposed support frame for a traveling link guide track mounted alongside a missile. A pivotable traveling link, in the general shape of a bell crank, has one end connected to the missile antenna coupler with breakaway bolts. The other end is positioned in the traveling link guide track and moves along the track as the missile is launched. The pivotable traveling link has a length of coaxial cable firmly attached thereto with one end of the cable electrically connected to ground support equipment. The other end of the cable is connected to missile electrical circuits by the coupler. When the missile is fired and moves along the traveling link guide track, the pivot portion of the traveling link strikes a slider block in a retractor and capturing mechanism, and releases a spring loaded ram normally retained in compression by the block. The slider block impact force fails the breakaway bolts, kinetic energy rotates the traveling link into its captured position where it is retained by the released spring loaded ram. The padded portion is positioned at the upper end of the vertically disposed support frame.

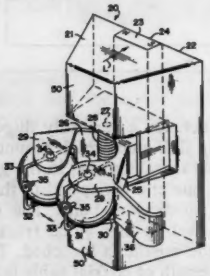
3,621,552
PNEUMATIC WIRE STRINGING APPARATUS FOR CORE MEMORIES
Leslie R. Walstrom, Excelsior, Minn., assignor to Fabri-Tek Incorporated, Minneapolis, Minn.
Filed July 23, 1970, Ser. No. 57,725
Int. Cl. H05k 13/00
U.S. Cl. 29—203 MM 36 Claims



Pneumatic apparatus for stringing wires through a row or column of aligned toroidal magnetic cores, the apparatus including a pneumatic gun in the form of a plurality of tubular means, the tubular means having a plurality of pneumatic ports through which pneumatic pressure enters the gun, and the means by which wire

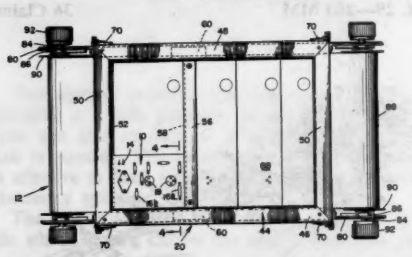
to be strung is fed through the tubular means. Apparatus is provided for automatically positioning the gun adjacent to the cores to be strung, and then applying pneumatic pressure through the ports into the gun to force the wire directly through the row or column of cores to be strung. Apparatus is also provided for holding and cutting a strung wire, and indexing the core memory to an unstrung column or row.

3,621,553
EXPANSION JOINT RETAINING MEANS
Raymond J. Lafeber, 3180 9th St., Cuyahoga Falls, Ohio 44221
Filed Nov. 4, 1969, Ser. No. 873,815
Int. Cl. B23p *19/00*
U.S. Cl. 29—200 P **10 Claims**



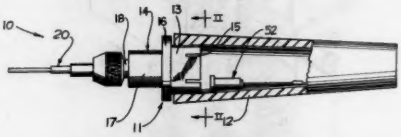
The retaining means includes a non-magnetic frame, permanent magnet means carried by the frame and exposed on one flat face thereof, a pair of opposed arms resiliently biased towards each other and with each arm positioning a roller member thereon on a horizontal axis for receiving an expansion joint therebetween to position it in a building when the magnet means engages a vertically extending flat faced metal column in the building.

3,621,554
APPARATUS FOR SETTING ELECTRIC COMPONENTS INTO PRINTED CIRCUIT BOARDS
Gustav Feldman, 263 Roosevelt Blvd., Long Beach, N.Y. 11561, and Charles Winkler, 21 Devon St., Malverne, N.Y. 11565
Filed May 19, 1969, Ser. No. 825,529
Int. Cl. H05k *3/30*
U.S. Cl. 29—203 **9 Claims**



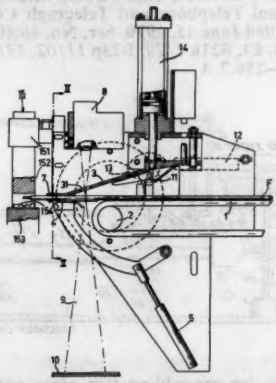
The method for setting a variety of types of electronic components in duplicates of a printed circuit board and apparatus for practicing the method; such apparatus consisting of an illuminated open-top box with a light-diffusing rigid pane set into its open top, a frame for supporting a circuit board above the pane, and an opaque film reciprocally movably mounted on the box between the pane and the board support. The film is first made into a template by perforating different areas thereof, with the perforations of each area conforming in arrangement to the lead wire openings for one component type, by passing a film perforating tool through the appropriate openings of the prototype board and then using the template film to set appropriate component lead wires through board openings registering with illuminated perforations of each template film area as the areas are successively moved under a duplicate board.

3,621,555
TOOL FOR USE WITH ELECTRICAL CONNECTORS
Richard R. Cowmeadow, Bramalea, Ontario, Canada, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Aug. 21, 1969, Ser. No. 851,911
Int. Cl. H01r *9/16*
U.S. Cl. 29—203 H **9 Claims**



A tool for insertion or withdrawal of fragile elongated contact units into or from electrical connectors in which flexible resilient means are provided in a tool bit to allow angulation of a handle while allowing proper alignment of the contact unit in a passage of a connector and while avoiding bending or breaking of the contact unit. In one type of bit, one end of a tubular member fits over a contact unit and the opposite end is flared to engage a ball bearing while being supported within a sleeve of elastomeric material. In another type of bit, one end of a member of U-shaped cross-section forms a trough receiving a contact unit and the opposite end is firmly connected to the handle, an intermediate portion being flexible and resilient. Means are provided for selective attachment of either type of tool bit to a common handle.

3,621,556
FEEDING AND EJECTING DEVICE
Michel Thierri and Pierre Toussaint, Amiens, Somme, France, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 16, 1969, Ser. No. 885,540
Claims priority, application France, Dec. 20, 1968, 179,502
Int. Cl. H01r *3/00*; H05k *3/04*
U.S. Cl. 29—203 D **12 Claims**



A method and device for feeding an object to be worked on from a first working position to a second working position by advancing the object by means of an endless conveyor belt of variable speed to a position directly in front

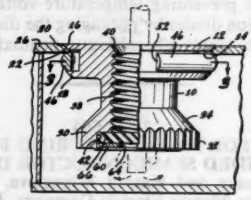
of the second working position including a guide member for guiding the object to the desired position and a brake member arranged at the end of the conveyor belt for cooperation with the guide member so as to accurately set the object in the proper position. A clamping member for tightly holding the object after the brake member has been released is actuated by a hydraulic press and after the object has been worked on the object is ejected from the position by a compressed air nozzle having a length adaptable to the length of wire.

3,621,557

INSERT FOR SANDWICH PANELS AND METHOD OF INSTALLATION

Kenneth V. Cushman, Santa Ana, and Delmar S. Miller, Newport Beach, Calif., assignor to Delron Fastener Division of Rex Chainbelt, Inc., Milwaukee, Wis.

Filed June 6, 1969, Ser. No. 831,162
Int. Cl. B23p *3/00, 19/04*
U.S. Cl. 29—460 7 Claims



The device is an insert to be potted (molded) into light weight cores or sandwich panels. It has a flanged head with detent means to hold the insert in position in which it is to be potted in, in the panel. An improved method is provided whereby the potting material is injected through the bore of the insert, back flow being prevented by a diaphragm or valve disc having a slit (in a preferred form) through which the nozzle of the potting gun is inserted. The insert may be of the floating nut type with improved means in the bore of the insert to prevent rotation of the nut.

3,621,558

MANUFACTURE OF DETONATING FUSE CORD

David Martin Welsh and Peter Edgar Phillips, Brownsburg, Quebec, Canada, assignors to Canadian Safety Fuse Company Limited, Montreal, Quebec, Canada

Filed Jan. 19, 1970, Ser. No. 3,860
Claims priority, application Canada, May 6, 1969, 50,767
Int. Cl. B22f
U.S. Cl. 29—420 2 Claims

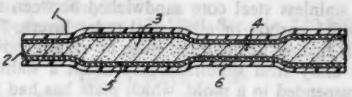
Detonating fuse cord having along its length alternating sections of greater and lesser explosive energy is manufactured by forming dry particulate explosive into a core about a centre threadline in such a manner that the core is made up of connected sections of greater and lesser explosive mass. The core is thereafter enveloped with a protective covering.

3,621,559

MANUFACTURE OF DETONATING FUSE CORD

David Martin Welsh, Brownsburg, Quebec, Canada, assignor to Canadian Safety Fuse Company Limited, Montreal, Quebec, Canada

Filed Jan. 19, 1970, Ser. No. 3,861
Claims priority, application Canada, May 6, 1969, 50,766
Int. Cl. B22f
U.S. Cl. 29—420 3 Claims



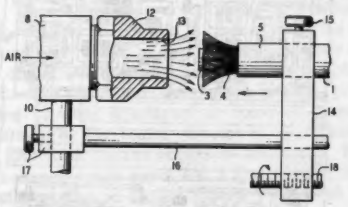
Detonating fuse cord having along its length alternating sections of greater and lesser explosive energy is manufactured by the controlled ejection of slurried particulate explosive into a stocking and thereafter drying and covering the filled stocking.

3,621,560

METHOD AND APPARATUS FOR OPENING AN END OF A BRAIDED CONDUCTOR OF A COAXIAL CABLE

Edwin L. Le Bright, Millington, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill and Berkeley Heights, N.J.

Filed July 17, 1969, Ser. No. 842,556
Int. Cl. B23p *19/02*
U.S. Cl. 29—427 1 Claim



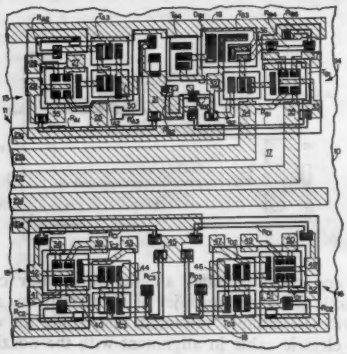
The apparatus includes an air compressor connected to a nozzle for expelling a jet of air therefrom. A clamping device is slidably mounted and holds an end of a coaxial electric cable in alignment with the nozzle which, in one embodiment of the invention, has an orifice slightly larger than the end of the coaxial cable. A motor-driven mechanism operates to slide the clamping device toward the nozzle for bringing the end of the cable into the jet of air and, subsequently, moving it inside the nozzle which, in another embodiment of the invention, has a flared orifice.

The method comprises the steps of removing a section of the external protective jacket of the coaxial cable at an end thereof for exposing a portion of the woven metallic wires of the braided conductor, holding this end of the cable in alignment with the nozzle, moving the cable end into the jet of air for at least partly unweaving the braided wires and thereby uncovering a portion of the underlying dielectric material, and then inserting the dielectric material inside the orifice of the nozzle for further unweaving the strands of wire and for forcing them to move away from the dielectric material in a direction normal thereto and thereby completely opening the end of the braided conductor. The method also comprises the step of further inserting the entire end of the cable inside the nozzle for folding the unwoven wires back over the external jacket of the cable.

3,621,561
METHOD FOR FABRICATING A METALLIC COMPOSITE INGOT
David A. Higbee and Joseph C. Jasper, Middletown, Ohio, assignors to Armco Steel Corporation, Middletown, Ohio
No Drawing. Filed Feb. 4, 1969, Ser. No. 796,616
Int. Cl. B23k 19/00; B23p 17/00
U.S. Cl. 29—527.7 8 Claims

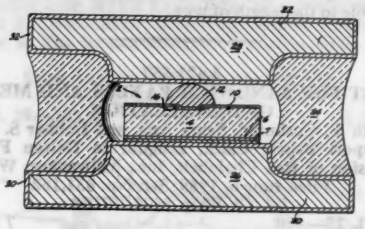
This disclosure relates to the product and to the method whereby a metallic composite is produced having a thin stainless steel core sandwiched between two relatively thick carbon or alloy steel outer layers. The composite is formed at the ingot stage by casting carbon steel or low alloy steel simultaneously about a stainless steel plate suspended in a mold, which plate has had its major surfaces covered by a protective layer so as to control the alloy depletion therefrom. The resulting product exhibits excellent resistance to pitting and penetration in those corrosive environments where such phenomena are known to be a problem.

3,621,562
METHOD OF MANUFACTURING INTEGRATED CIRCUIT ARRAYS
Hasmukh M. Patel, Woburn, Mass., assignor to Sylvania Electric Products Inc.
Filed Apr. 29, 1970, Ser. No. 32,934
Int. Cl. B01j 17/00; H01l 1/16
U.S. Cl. 29—577 8 Claims



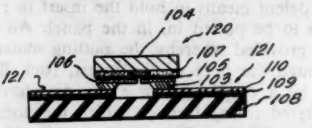
Method of metallizing an integrated circuit network containing an array of identical cells to produce a specific subsystem. Each identical cell includes several groups of components, each group being capable of being interconnected in several different arrangements to form several different basic logic circuits. A first identical metallization pattern is placed on each cell of the array and includes all the different arrangements of interconnections between the components of each group of the cell, and also a block of metal adjacent the cell. To commit each cell to a specific logic arrangement, metal is removed so that each group becomes one specific basic logic circuit and so that the block of metal becomes a first set of discrete conductive paths. A layer of non-conductive material is applied over the array, openings are made therein to expose appropriate areas of the first metalliaztion, and then a second metallization pattern is applied to form a second set of conductive paths generally transverse to the first set. The second set in conjunction with the first set interconnects the basic logic circuits into a specific subsystem.

3,621,563
METHOD OF TREATING JUNCTION DIODES TO PREVENT TEMPERATURE-VOLTAGE DEGRADATION
Allen Gee, Newport Beach, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.
Filed Apr. 19, 1968, Ser. No. 722,724
Int. Cl. B01j 17/00; H01l 1/10
U.S. Cl. 29—588 14 Claims



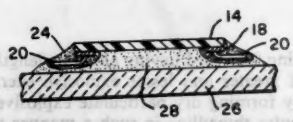
Method of preventing temperature-voltage degradation of P-N junction diodes by packaging the diode with a compound which yields phosphorous pentoxide upon being heated.

3,621,564
PROCESS FOR MANUFACTURING FACE-DOWN-BONDED SEMICONDUCTOR DEVICE
Shigezo Tanaka and Katsuji Minagawa, Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed May 7, 1969, Ser. No. 822,484
Claims priority, application Japan, May 10, 1968, 43/31,406
Int. Cl. B01j 17/00; H01l 7/24
U.S. Cl. 29—590 4 Claims



A face-down-bonded semiconductor device is disclosed in which the electrodes of a semiconductor element and of the substrate carrying that element by face-down-bonding has a surface formed of a first metal which readily forms an alloy with a second metal, that alloy having the characteristic that its melting point is higher than that of the second metal.

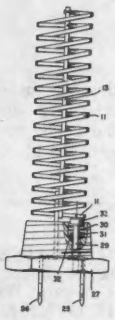
3,621,565
FABRICATION OF SINGLE-CRYSTAL FILM SEMICONDUCTOR DEVICES
Donald B. Sandstrom, Gleasondale, and David E. Sawyer, Newton Centre, Mass., assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
Filed June 12, 1969, Ser. No. 832,603
Int. Cl. B01j 17/00; H01l 7/24
U.S. Cl. 29—590 4 Claims



The fabrication of devices wherein a single-crystal film is formed on a growth substrate, device fabrication operations are performed on the exposed surface of the

film and the film thereafter transferred to a nonconductive base. The transfer step includes dissolution of the growth substrate and may be followed by additional device fabrication operations performed on the second side of the film.

3,621,566
METHOD OF MAKING AN ELECTRICAL HEATING ELEMENT
James W. Welsh, Summit, N.J., assignor to Standard Motor Products, Inc., Long Island City, N.Y.
Filed May 7, 1969, Ser. No. 822,575
Int. Cl. H01c 17/00
U.S. Cl. 29—610 6 Claims

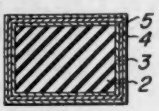


Method of making an electrical heating element which includes cutting a planar resistance member into a plurality of laterally interconnected strips and bonding insulating material about the strips. The insulating material is preferably a thermoplastic material and is preferably affixed by dipping the strip into liquified material. The insulating material has a thickness of from .0025–.006 inch with preferred thickness being .001 inch.

An electrical heating element is also described which comprises a resistance member having insulation bonded thereto. The resistance member is formed of an integral interconnected plurality of laterally disposed members with each member connected to the adjacent member at an opposite side portion.

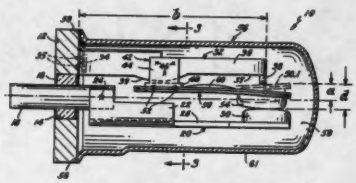
A water heater is shown which includes a water-containing tank having inlet and outlet conduits. An electrically operated heater member is disposed within the tank and a pressure-controlled switch is provided to render the heater member inoperative when the water within the tank falls below a predetermined level.

3,621,567
PROCESS FOR PRODUCING METALLIC FILM RESISTORS
Takeshi Hasegawa, Neyagawa-shi, and Yasuhiro Shindo, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 24, 1968, Ser. No. 786,637
Int. Cl. H01c 7/00, 17/00
U.S. Cl. 29—620 2 Claims



A process for producing metallic film resistors, comprising forming two or more layers of different metals on the surface of heat-resistant insulating substrates one on the other by non-electrolytic plating or electroplating and thereafter subjecting the coated substrates to heat treatment, whereby the different metals are alloyed by interlayer diffusion and thus a metal alloy coating is formed on the surface of the insulating substrates.

3,621,568
METHOD OF MAKING A MOTOR PROTECTOR
John R. D'Entremont, Foxboro, and Leith B. Young, Attleboro, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.
Original application Apr. 12, 1968, Ser. No. 720,980, now Patent No. 3,538,478, dated Nov. 3, 1970. Divided and this application Jan. 26, 1970, Ser. No. 10,703.
Int. Cl. H01h 11/00
U.S. Cl. 29—622 2 Claims

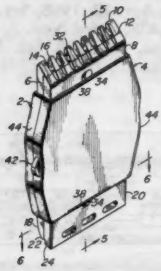


A hermetically-sealed, pressure-resistant motor protector is shown to comprise a header plate having a terminal post attached thereto in insulated relation to the plate, a cup-shaped body having its rim sealed to the header plate, a rigid angle-shaped heater element, a rigid angle-shaped contact arm having a fixed contact thereon, and a thermally-responsive snap-acting member having a movable contact at one end and having an angle-shaped support welded to the opposite end of the snap-acting member. These protector components are secured together by welding to provide a circuit from the header plate through the heater and snap-acting member with its movable contact to the fixed contact and from the fixed contact through the contact arm to the terminal post. The snap-acting member is adapted to move in response to heat generated by the heater element to open this circuit when an overload current occurs in the circuit. Each of the angle-shaped components has a first portion disposed in a selected plane and has an angularly disposed portion welded to an adjacent component. In this way, any collapse of the component materials which occurs during welding does not alter the disposition of the first portion of the respective component in its desired plane. This permits the components to be accurately assembled and secured together to provide an accurate motor protector. Preferably the angle-shaped support component has one flange welded to the thermally-responsive snap-acting member before the member is deformed to provide the member with its thermal response characteristics. Subsequent welding of the other flange of the support to an adjacent component permits accurate mounting of the snap-acting member in the motor protector without subjecting the snap-acting member to welding forces and temperatures which might alter its thermal response characteristics.

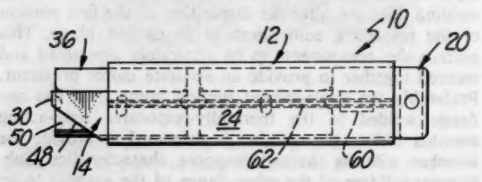
3,621,569
HOME HAIR TRIMMER AND SHAVER
Nathan K. Morris, 41 Ridge Ave., Neptune, N.J. 07753
Filed Feb. 19, 1970, Ser. No. 12,545
Int. Cl. B26b 21/12
U.S. Cl. 30—30 1 Claim

A novel home hair trimmer and shaver is disclosed comprising an elongated body portion having at each end thereof a blade holder portion of generally rectangular configuration secured thereto and preferably forming an

integral part thereof. The blade holder portion at one end of the body portion terminates in a transverse edge having a plurality of notched recesses therein defining teeth, while the blade holder portion at the other end terminates in a rounded transverse edge. The integral body portion and head portions are separable into a pair of opposing trimmer half members between which double-edge razor blades may be secured, with a cutting edge thereof exposed adjacent and parallel to each of the transverse edges. Positioning means and centrally disposed locking means are provided for aligning and selectively locking the opposing trimmer half members in mating juxtaposed relationship with the transverse notched edge of one half member vertically offset with respect to the other, and with the double edged razor blades being retained therebetween. Removal of the razor blade is effected by merely sliding one of the trimmer half members laterally with respect to the other. This novel home hair trimmer and shaver performs the multiple functions of trimming, shaping, thinning and shaving hair depending upon the particular mode of use of the trimmer assembly.

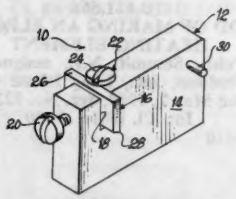


3,621,570
RAZOR BLADE TOOL
Arthur Kolde, 896 Collingwood Drive, Pomona, Calif. 91766; Robert J. Ferjo, 14055 E. Lomitas, La Puente, Calif. 91746; and Kenneth M. Ferjo, 1201 Riderwood Ave., Hacienda Heights, Calif. 91745
Filed May 22, 1970, Ser. No. 39,711
Int. Cl. B26b *1/08*
U.S. Cl. 30—162 **4 Claims**



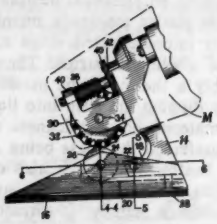
A razor blade tool having a flat sheath-like handle containing a blade holder in the form of a flat slide with a spare blade holding means between its ends and cutting blade holding means at its ends for receiving razor blades in positions wherein one cutting blade has its cutting edge extending lengthwise of the slide and an exposed cutting corner at one end of the slide and the other cutting blade has its cutting edge extending crosswise of and exposed beyond the opposite end of the slide. The slide is movable longitudinally of the handle to locate either blade in cutting position beyond the adjacent end of the handle and to locate the blade with the exposed cutting corner in sheathed relation within the handle. Resilient latching detents on the slide releasably lock the slide against movement from the latter blade sheathing position.

3,621,571
SKI DRESSER
Fritz Gern, 40 Flower City Park, Rochester, N.Y. 14615
Filed Oct. 21, 1970, Ser. No. 82,764
Int. Cl. B26b *3/00*
U.S. Cl. 30—169 **8 Claims**



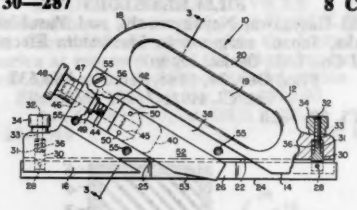
A ski dresser for dressing metallic ski surfaces. The dresser provides a surface for stably contacting a ski surface and a blade and guide pin for stably contacting the surface to be dressed. The blade is adjustable to dress surfaces of different dimensions.

3,621,572
ELECTRIC ROTARY PINKING SHEARS
James B. Kruger, Oxford, Conn., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed May 18, 1970, Ser. No. 38,217
Int. Cl. B26b *17/00*
U.S. Cl. 30—178 **2 Claims**



An electric rotary pinking shears has a pivoted anvil foot affording comfortable use positions and convenient storage means.

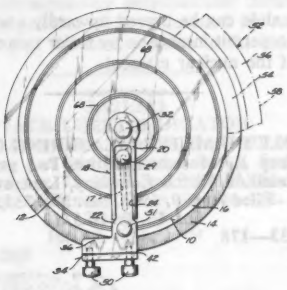
3,621,573
CARPET CUTTER AND TRIMMER
John A. Summers, East Rochester, N.Y., assignor to Carder Industries Inc., Rochester, N.Y.
Filed Jan. 23, 1969, Ser. No. 793,467
Int. Cl. B26b *3/04*
U.S. Cl. 30—287 **8 Claims**



The cutter comprises an aluminum casting having an elongate, plane support surface on its underside, an elongate guide projecting downwardly from said surface intermediate its sides, an adjustable cutting blade in the casting

having a sharp cutting edge projecting below and adjacent to the guide, and an integral hand grip for manipulating the cutter to move the guide longitudinally between two adjacent rows of pile in a carpet, while forcing the cutting edge downwardly to sever the carpet backing. The support surface is substantially wider than the guide and cutting blade so that opposite sides of the support surface overlie the adjacent rows of pile to stabilize the cutter during cutting. The guide may be mounted for vertical adjustment in the casting. In one embodiment of the invention, a second support surface, guide, and cutting blade may be mounted in the underside of the cutter parallel to the first-named guide, and blade so that two cuts along parallel lines may be made simultaneously.

3,621,574
PHOTOGRAPHIC PRINT CIRCLE CUTTER
Gerald F. Yanke, 7301 N. Granville Road, Milwaukee, Wis. 53224, and Burton E. Yanke, W173 N9444 Erika Road, Menomonee Falls, Wis. 53051
Filed June 30, 1970, Ser. No. 51,062
Int. Cl. B26b *27/00*
U.S. Cl. 30—290 **5 Claims**



Disclosed herein is a centerless circle cutter particularly adapted for trimming circular photographic prints from rectangular prints of negatives taken with a fish-eye lens. The circle cutter comprises a transparent central disc having a peripheral flange of less thickness than the disc, and a radially adjustable cutting arm which is pivotably supported on an upstanding boss on the disc and carries a cutting blade. Adjustment of the cutting arm to cut various diameter circles is facilitated by a plurality of concentric varying diameter templates or rings having inner and outer offset flanges which overlap and interfit with the flanges of the adjacent rings. The outermost surface of the flange and the associated shoulder of the disc and template provide guiding surfaces for the cutting blade and cutting arm for the appropriate diameter circle.

3,621,575
IN-SITU DENTURE AND METHOD OF FORMATION
Sidney Schneider, 576 Sussex Ave., Morristown, N.J. 07960, and Harry Katz, 785 Pleasant Valley Way, West Orange, N.J. 07052
Continuation-in-part of application Ser. No. 809,086, Mar. 21, 1969, which is a continuation-in-part of application Ser. No. 635,579, May 2, 1967, now Patent No. 3,460,252. This application Feb. 16, 1970, Ser. No. 11,577
Int. Cl. A61c *19/00*
U.S. Cl. 32—2 **65 Claims**

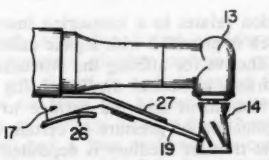
Disclosed are devices and methods for forming a denture in-situ in the mouth of a dental patient. A liquid resin curable to a rigid plastic is placed over the upper portion of false teeth held in a tray, a thin shim which may be a porous shim including a gutter portion generally positioned over the teeth is placed on said resin, a second liquid resin curable to a semi-rigid plastic is placed

over the shim, and the resulting assembly placed in the patient's mouth where pressure is applied and the resins cured to form the denture which is thereafter separated from the tray.

3,621,576
SEMIBAKED PORCELAIN TEETH
Rafael Gnecco, 3820 Waldo Ave., Riverdale, Bronx, N.Y. 10463
No Drawing. Continuation of application Ser. No. 674,027, Aug. 10, 1967. This application Mar. 17, 1970, Ser. No. 19,522
Int. Cl. A61c *13/00*
U.S. Cl. 32—8 **10 Claims**

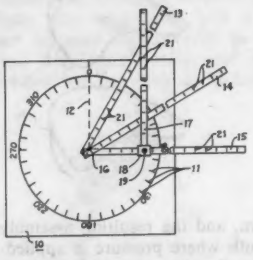
A process for fabricating a dental appliance or tooth structure in which a porcelain mixture is initially shaped and fired to a temperature below the vitrification point. Those surfaces which are to be worked and modified subsequently to fit the appliance to a particular case, are then coated with refractory material. After heating the structure to the vitrification point, the covered surfaces are worked and shaped to particular requirements, and the resulting mass is reheated to the vitrification point to render a homogeneously fused structure with finished surfaces.

3,621,577
DENTAL PROPHYLAXIS APPARATUS
Ronald P. Spinello, 372 Post Ave., Westbury, N.Y. 11590
Filed May 1, 1970, Ser. No. 33,770
Int. Cl. A61c *13/22*
U.S. Cl. 32—58 **16 Claims**



A dental prophylaxis device including a rotary, pliable tooth-engaging member of flexible material, onto the side wall of which is discharged, under the finger control of the dentist, a cleaning paste from the tip of a collapsible reservoir in the form of an expendable vial mounted on the nearby shank of the dental tool and having a contoured, flexible discharge tip which extrudes paste onto the tooth-engaging member when the reservoir is squeezed. The pliable member is preferably formed with paste-impelling surfaces which move the paste toward the tooth, and the tip of the vial maintains its proximity to the side wall of the pliable member both to continue the flow of paste to the tooth surface, and to preclude accumulations which result in splattering.

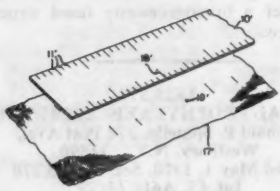
3,621,578
NAVIGATIONAL INSTRUMENT
Stephen Novakovic, 3718 Library St., Cleveland, Ohio 44109
Filed Sept. 22, 1969, Ser. No. 859,842
Int. Cl. G01b 5/24
U.S. Cl. 33—1 SB 7 Claims



A navigational instrument is provided adapted for direct reading as a guide in quickly determining navigational data, distances from fixed locations, true wind speed, true wind angle, and the like.

In one form, the instrument comprises an angle scale, preferably 360 degrees, having a plurality of arms pivotally mounted at its center. By positioning the arms on the scale at certain angles and utilizing a reading arm, certain navigational data can be quickly ascertained, both for motor ships and sailboats.

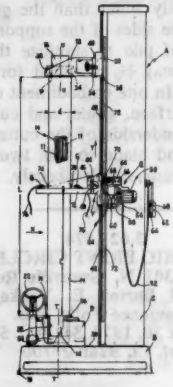
3,621,579
TAPE WITH INDICIA TRANSFER
Rose Dubitsky, 1734 N. Troy St., Arlington, Va. 22201
Filed Nov. 20, 1967, Ser. No. 684,324
Int. Cl. B43i 7/00; G01b 3/10
U.S. Cl. 33—137 3 Claims



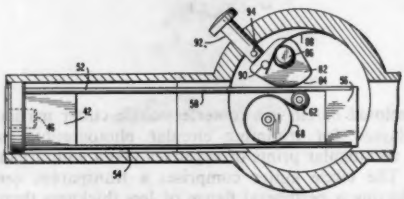
This invention relates to a measuring instrument such as a tape which is provided with legible calibrated markings and an adhesive for affixing the instrument to a surface to be marked, a transfer medium being so disposed between the instrument and the surface to be marked that upon application of pressure to certain areas of the instrument, the transfer medium is deposited on the surface to be marked, over an area coincident with the area below which the pressure is applied to the instrument.

3,621,580
MACHINE FOR THE DIMENSIONAL CONTROL OF ELEMENTS FOR NUCLEAR FUELS
Gian Luigi Tovaglieri, Busto Arsizio, Varese, Italy, assignor to Tovaglieri & C. S.p.A., Busto Arsizio, Varese, Italy
Filed Jan. 15, 1968, Ser. No. 697,720
Claims priority, application Italy, Oct. 4, 1967, 21,253/67
Int. Cl. G01b 5/04
U.S. Cl. 33—174 10 Claims

A machine for the dimensional control of nuclear fuel elements, comprising a base plate and a vertical column carrying respectively a bottom and a top seat to which the element to be inspected can be secured with its axis strictly parallel to the column axis. Along said vertical column a slide can be moved upwardly and downwardly, in order to permit inspection by feeler means on the outer surface of the nuclear element.



3,621,581
HOLE DIAMETER MEASURING GAUGE
Rodney E. Moseman, Lititz, Pa., assignor to Hamilton Watch Company, Lancaster, Pa.
Filed Aug. 9, 1968, Ser. No. 751,460
Int. Cl. G01b 5/12
U.S. Cl. 33—178 11 Claims

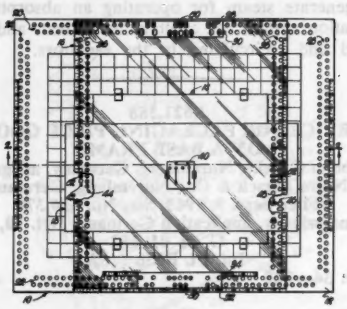


The measuring gauge has an elongated cylindrical casing housing a plunger mounted for axial reciprocal movement and carrying a constantly tapered measuring needle externally of the casing. The plunger includes a pair of laterally spaced bars. A metal band having an S-shape is constrained between the bars with opposite ends of the band being fixed to the respective inner faces of the bars. A pair of different diameter rollers pivotally mounted to the casing and mounting respective dial hands on a gauge frictionally engage within the loop portions of the S-shaped band. Insertion of the needle into the hole with the corresponding end of the casing butting the annular margin of the hole provides a hole diameter measurement readout on the dial face.

3,621,582
LITHOGRAPHIC APPARATUS
Frank J. Radencic, 7932 Haskell, Kansas City, Kans. 66109
Filed Feb. 19, 1970, Ser. No. 12,699
Int. Cl. B41b 1/00
U.S. Cl. 33—184.5 9 Claims

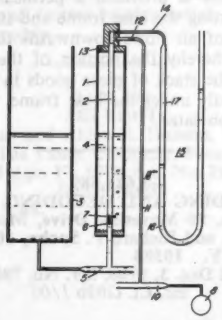
Photolithographic apparatus for treating a photosensitive surface by the successive imposition upon different predetermined spaced portions of the surface of identical photoimpressions of an image created by the passage of

light through an image-forming negative or positive comprises a guide panel for supporting the surface, a transparent carrier member and a frame-like chase which supports the negative or positive. Hence, the negative or positive



is positionable relative to the photosensitive surface in either of two perpendicular directions by fractional increments of corresponding perpendicular dimensions of the negative or positive without the need for remounting or repositioning of the latter relative to the chase.

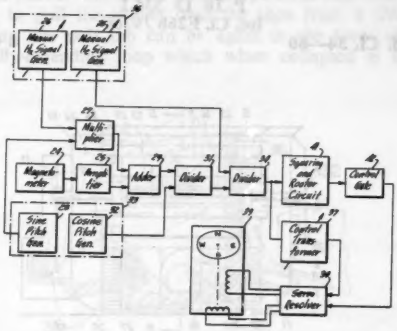
3,621,583
JACK LEVEL INDICATOR
Stanley Peter John Ellis, London, England, assignor to John Laing and Son Limited, London, England
Filed Apr. 25, 1969, Ser. No. 819,153
Claims priority, application Great Britain, Apr. 29, 1968, 20,188/68
Int. Cl. G01c *5/04*
U.S. Cl. 33—209 **2 Claims**



The invention relates to a method and apparatus for determining the levels of a plurality of work-pieces. A container is placed on each work-piece and connected to a source of liquid of which an amount, depending on the level of the container, enters the container. A tube extends into the container and is open to the liquid. A fluid forces liquid out of the tube and bubbles through the liquid. The back pressure on the fluid depends on the amount of liquid in the container, and this pressure is measured.

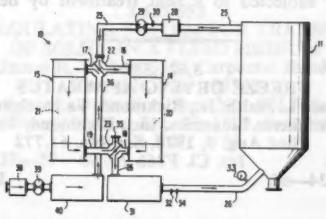
3,621,584
MAGNETOMETER COMPASS
Wayne E. Burt, P.O. Box 4072, Panama City, Fla. 32401
Filed Dec. 10, 1969, Ser. No. 883,719
Int. Cl. G01c *17/02, 17/38*
U.S. Cl. 33—224 **10 Claims**

This invention describes a magnetic compass suitable for use in a small craft. The compass employs a single magnetometer for sensing the earth's magnetic field and associated circuitry for computing the magnetic heading. The associated circuitry includes a pitch sensitive signal generator which together with analog circuits compensates for pitching motions of the vessel in which it is operated. Manually set signal sources provide signals for compensa-



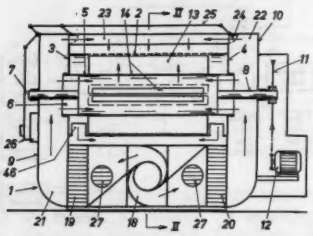
tion of the horizontal and vertical components of the earth's magnetic field over the area in which the device is operated. An adjustable mounting for the magnetometer sensor places the device in a remote location and provides for adjustment which effectively compensates the compass for errors caused by vehicle roll.

3,621,585
MATERIALS DRYER
Joseph D. Robertson, 980 Swathmore Drive NW., Atlanta, Ga. 30327
Filed Oct. 31, 1969, Ser. No. 873,002
Int. Cl. F26b *3/10*
U.S. Cl. 34—10 **23 Claims**



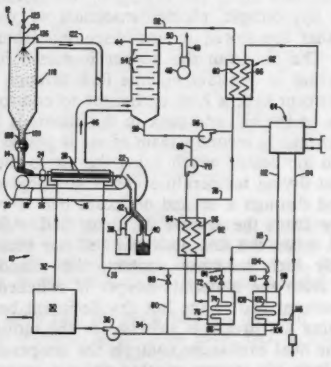
A materials dryer for drying or dehumidifying particulate hygroscopic plastics materials or similar materials that are stored in and dispensed from a closed hopper. The air from the hopper is passed in a closed loop stream at constant volume flow through a filter, a first desiccant bed, a heat exchanger to control the temperature of the air, and back to the materials hopper. In the meantime, a second stream of air is passed through a filter, an air heater which heats the air to the optimum desiccant drying temperature above 400 degrees Fahrenheit, and through a second desiccant bed to remove the moisture from the second desiccant bed. After a time interval, when the first desiccant bed has accumulated a relatively high moisture content, the closed loop air stream from the materials hopper is switched from the first desiccant bed to the hot dry desiccant bed, and the hot drying air stream is switched to the moist desiccant bed. The heat exchanger controls the temperature of the closed loop air stream so that the air stream whether flowing from a hot or cool desiccant bed, is at the optimum material drying temperature as it enters the materials hopper.

3,621,586
APPARATUS FOR THE CONTINUOUS TREATMENT OF WEB-SHAPED MATERIALS, ESPECIALLY TEXTILE WEBS
Arnfried Meyer, Neckargartacherstrasse, 7101 Frankenbach, Germany
Filed Dec. 2, 1969, Ser. No. 881,401
Claims priority, application Germany, Dec. 7, 1968, P 18 13 334.1
Int. Cl. F26b 19/00
U.S. Cl. 34—60 8 Claims



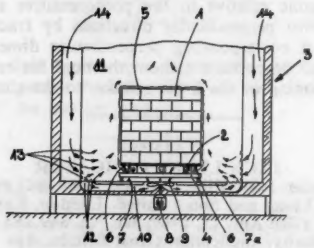
Apparatus for the continuous treatment of web-shaped, elastic material, especially textile webs, wherein the material to be treated is placed on a perforated supporting plate and is retained on this supporting plate under gas pressure. In order to advance this material in the feed direction and to loosen the material simultaneously, nozzles are provided which move in the feed direction and extend over the width of the web to be treated, while having a gas flowing therethrough. This gas produces a pressure directed oppositely to the first-mentioned gas pressure and lifts the material in ripples or waves off from the plate in the longitudinal zone of the nozzle. Each wave moves with the nozzle in the feed direction and thus effects the advancement of the material, which is simultaneously subjected to a heat treatment by heating the gas.

3,621,587
FREEZE DRYING APPARATUS
Horace L. Smith, Jr., Richmond, Va., assignor to Smitherm Industries, Inc., Richmond, Va.
Filed Aug. 6, 1970, Ser. No. 61,772
Int. Cl. F26b 19/00
U.S. Cl. 34—92 13 Claims



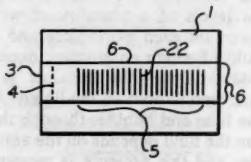
Freeze drying apparatus including a vacuum chamber in which one or more radiators are disposed. A fluid heat transfer medium is circulated through the radiator to heat it to a temperature sufficiently high to sublime the moisture and/or other volatiles from the frozen material. The volatiles thus evolved are condensed and removed from the evacuated part of the apparatus by a suitable sorbent. After leaving the radiator(s), the heat transfer fluid is employed to heat and concentrate the sorbent and/or to generate steam for operating an absorption type refrigeration system for cooling the sorbent and is then reheated and recirculated to the radiators.

3,621,588
DEVICE FOR PACKAGING PIECE GOODS ON A BASE FRAME
Diethelm Grocke, Nuremberg, Germany, assignor to Nutro Hirsch & Co., Nuremberg, Germany
Filed Sept. 9, 1969, Ser. No. 856,370
Claims priority, application Germany, Oct. 10, 1968, G 68 01 652
Int. Cl. B65b 1/02
U.S. Cl. 34—225 4 Claims



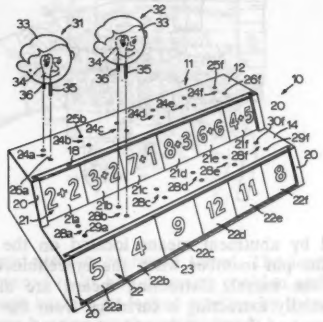
In apparatus for shrinking an envelope of synthetic material onto a stack of piece goods or a base frame, such as a pallet, there is provided a permeable area in the platform supporting the base frame and suction means so that a current of air flows downwards through the permeable oven whereby the portion of the envelope protruding below the stack of piece goods in the base frame is turned inwardly under the base frame, so that manual prefastening is obviated.

3,621,589
INDICIA CODING AND DECODING APPARATUS
Harry S. Jones, 50 Mavesink Drive, Monmouth Beach, N.J. 07750, and Richard P. Spohn, 108 Potter Road, Scarsdale, N.Y. 10583
Filed Dec. 3, 1968, Ser. No. 780,769
Int. Cl. G09b 1/00
U.S. Cl. 35—2 6 Claims



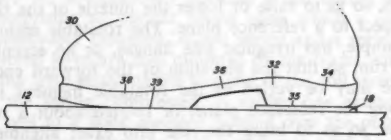
An information security system wherein a masking pattern is permanently added to either a signature or any larger written or printed matter or diagram thus coding and causing the material to be substantially unreadable and wherein an optical readout plate having a multiplicity of lenses arranged to match the masking pattern is used for decoding or readout purposes. The use of camouflaging marks on the masking pattern further reduces the possibility of readout without the optical readout plate.

3,621,590
CHILD'S EDUCATIONAL TOY
Joseph Louie Olynick, St. Catherines, Ontario, Canada, assignor to Edmund Ma, Toronto, Ontario, Canada
Filed Aug. 10, 1970, Ser. No. 62,274
Int. Cl. G09b *7/10*
U.S. Cl. 35—9 C **6 Claims**



An educational toy is provided with two sets of double-pole electrical sockets. An electrically operable indicator or lamp can be selectively inserted into each socket. Panels having a number of indicia-bearing frames or units are inserted into guideways provided for such purpose on the housing of the toy so that each such frame of one panel is disposed in apposition to a respective one of the sockets of one set and each such frame of the other panel is similarly disposed in apposition to a respective one of the sockets of the other set. The terminals of the various sockets are electrically interconnected within the housing to an electric storage cell so that both lamps are illuminated when they are inserted into sockets which are in apposition to panel frames bearing indicia having a predetermined relationship.

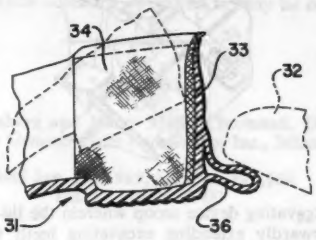
3,621,591
SKI BOOT
Chris A. Hanson and Alden B. Hanson, Boulder, Colo., assignors to The Lange Company, Broomfield, Colo.
Filed Apr. 17, 1970, Ser. No. 29,535
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **2 Claims**



An improved ski boot has a curved, flexible sole to permit easier walking and more rigid anchoring to a ski boot binding apparatus.

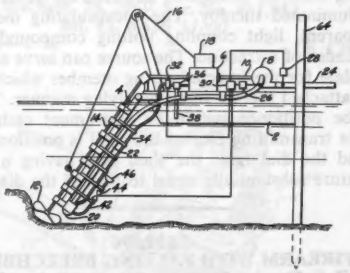
3,621,592
RUBBER WITH BUILT-IN BOOT JACK
Isaac Goldmerstein, 210 Riverside Drive, New York, N.Y. 10025
Filed Aug. 21, 1970, Ser. No. 65,855
Int. Cl. A43b
U.S. Cl. 36—2.5 RY **5 Claims**

A foot rubber or boot is provided with an elongated pull tab extending rearwardly from the heel portion to permit the toe of the other foot to secure this tab to the floor while lifting upon the shoe to remove the heel of the shoe from the heel portion of the rubber. The heel portion of the rubber is preferably provided with a liner or other rigid material adhered to the inside of the normal flexible rubber material to render the heel portion rigid and stiff to facilitate the removal of the heel of the shoe but also the easy insertion of the heel of the shoe into the rubber while in a standing position and without having to pull the rubber over the shoe from a sitting position. The pull tab can be again in the form of a vertically-extending loop which when collapsed is flat-



tened upon the floor by the toe and which when rubber is being worn serve as a storage for a toe filler body which can be used in the toe of the shoe to render the rubber tight upon the foot on certain occasions. For a further form of the invention a pull tab is anchored to the lower portion of the heel and extends upwardly over the outer surface of the heel portion and is retained by a transversely-extending elastic loop leaving the upper end of the tab accessible for placing the foot over the same and for lowering the pull tab to the floor to hold the rubber by the pull tab as the shoe is lifted from the rubber.

3,621,593
SELF-REGULATING SYSTEM FOR TRANSMISSION OF SOLIDS IN A FLUID MEDIUM
James R. Hickey, 3324 Carpenter Road, Titusville, Fla. 32780
Continuation of application Ser. No. 675,386, Oct. 16, 1967. This application Jan. 13, 1970, Ser. No. 1,989
Int. Cl. E02f *3/88*
U.S. Cl. 37—57 **11 Claims**



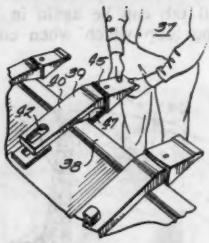
A device for automatically regulating the solids to liquid ratio in a dredging system and the like, utilizing pressure sensors to detect pressure variations caused by clogging or mass ratio changes in the system. The pressure sensors in turn control a valve or valves which meter clear fluid to the intake of the dredging system, in an amount to unplug the intake and/or lower the solids to liquid ratio to a safe level.

3,621,594

CUTTING EDGE FOR EXCAVATING DEVICES

Frederick C. Hahn, Beaverton, and Robert K. Emrich, Portland, Oreg., assignors to ESCO Corporation, Portland, Oreg.

Filed Feb. 13, 1969, Ser. No. 798,953
Int. Cl. E02f 9/28
U.S. Cl. 37—141 2 Claims



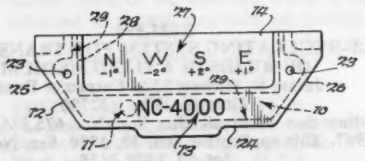
An excavating device scoop wherein the lip is equipped with forwardly extending excavating teeth which additionally serve to confine wear shrouds.

3,621,595

ELECTROLUMINESCENT LIGHT SOURCE AND STRUCTURES ILLUMINATED THEREBY

Richard W. Coolbaugh, East Aurora, and Floyd W. Engels, Colden, N.Y., assignors to A-T-O Inc., Cleveland, Ohio

Continuation-in-part of application Ser. No. 694,967, Jan. 2, 1968, now Patent No. 3,545,110. This application May 9, 1969, Ser. No. 823,302
Int. Cl. G09f 13/22
U.S. Cl. 40—130 M 12 Claims



A light source comprising an electroluminescent member encapsulated within a shell of light transmitting material and a separate indicia-bearing member of light transmitting material positioned adjacent the source so as to be illuminated thereby. The encapsulating medium is a transparent, light coupling potting compound having a high index of refraction. The source can serve as a mounting plate for the indicia-bearing member which is releasably attached thereto in an overlying manner. The source can be positioned within an instrument casing so that a light transmitting face of the shell is positioned directly behind the dial face, the shell face having a degree of curvature substantially equal to that of the dial face.

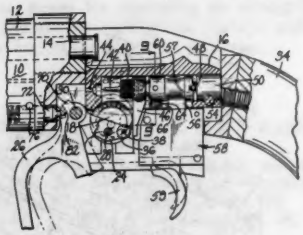
3,621,596

FIREARM WITH FALLING BREECHBLOCK

Carl T. Colliander, Warwick, R.I., and Robert L. Hillberg, Cheshire, Conn., assignors to Colt's Inc., Hartford, Conn.

Filed Sept. 11, 1969, Ser. No. 856,968
Int. Cl. F41c 11/00, 7/00
U.S. Cl. 42—23 15 Claims

A firearm having a falling breechblock adjacent a barrel, which is mounted in a stationary position on the frame of the firearm. The breechblock is slidably mounted, such that it is displaced by the movement of a crank lever connected to a disc rotatably mounted on bearings located in the side walls of the breechblock. A spring-biased pin member is slidably mounted in the breechblock and is



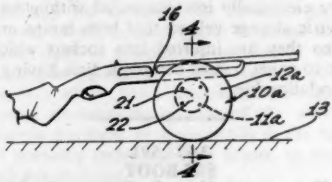
cocked by abutment means located on the crank lever upon the pin member when the breechblock is lowered below the barrel. Extracting means are also provided for partially extracting a cartridge from the barrel upon movement of the crank lever to an open position.

3,621,597

ADJUSTABLE FIREARM REST COMPRISING AN IRREGULAR ROTATABLE MEMBER

Gerald E. Price, 9221 Bolsa Ave., Westminster, Calif. 92683

Filed Sept. 15, 1969, Ser. No. 858,054
Int. Cl. F41c 29/00
U.S. Cl. 42—94 7 Claims



An improved rifle rest for aiming and firing purposes. The rifle rest takes the form of an irregular rotatable member for supporting the forestock of the rifle, and which may be rolled along a surface or turned on an axis, so as to raise or lower the muzzle of the rifle with respect to a reference plane. The rotatable member, for example, has irregular side flanges, or an eccentric hub or rim, so that the elevation of the forward end of the rifle may be varied as the rotatable member is rolled along the reference plane, or rotated about a reference axis, so as to bring the rifle into exact alignment with the target.

3,621,598

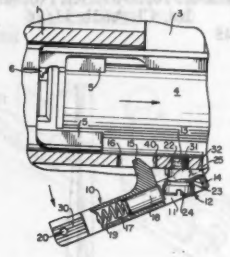
RIFLE BREECH BOLT LATCH

William B. Ruger, Southport, Conn., and Leroy J. Sullivan, Huntington Beach, Calif., assignors to Ruger, Sturm & Co., Inc., Southport, Conn.

Filed July 22, 1969, Ser. No. 843,387
Int. Cl. F41c 11/06, 11/00
U.S. Cl. 42—16 F 6 Claims

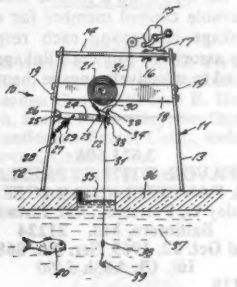
An improved latch for releasably stopping the rearward travel of the bolt in rifles having slidable breech bolts, for example of the Mauser type. The latch is pivotably mounted on a headed screw secured in the receiver and includes a spring-pressed plunger bearing on the screw head, which holds the latch in its bolt retaining position. The latch has an elongated hole for the screw which not

only holds the latch on the receiver but permits pivoted movement of the latch toward and away from the receiver. The latch also has a bolt stop lug which extends through an opening in the receiver to engage lug means



on the blot and stop its rearward travel. The latch may be pulled outward to its bolt releasing position and when released it snaps back to its locked position by the spring-pressed plunger bearing on the screw head.

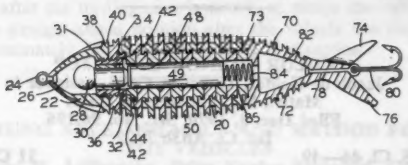
3,621,599
AUTOMATIC FISH CATCHER
Dan Uhlich and Marvin Uhlich, both of Main St., Anamoose, N. Dak. 58710
Filed Sept. 15, 1969, Ser. No. 857,927
Int. Cl. A01k *97/00*
U.S. Cl. 43—15 **1 Claim**



A device for automatically hooking a fish during ice fishing comprising an upright frame upon which a reel may be removably mounted. A coil spring and a spring-biased pivoted lever are also mounted on the frame with a pin on the lever engaging the free end of the coil spring to retain the spring compressed. A fishing line extends from the reel to a hook member hooked over the outer end of the lever and from the hook member to a fish hook in the water. A pull on the line will cause the hook member to pivot the lever and disengage the pin from the end of the coil spring, thus freeing the spring to jerk the line and set the hook in the fish's mouth.

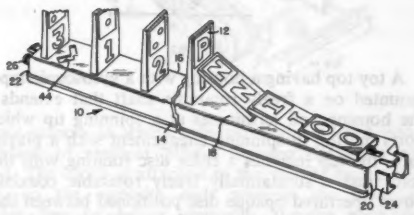
3,621,600
FISH LURE
Michael Dworski, 468 French Road, Rochester, N.Y. 14618
Filed June 20, 1969, Ser. No. 834,979
Int. Cl. A01k *85/00*
U.S. Cl. 43—17.6 **7 Claims**

A fish lure having a series of annular or peripheral fins with peripheral V grooves. The lure has a separate translucent head and body members assembled to the head either in the form of a series of disks or like halves which can be assembled around an incandescent lamp and drycell which weight the lure. The fins may be oval and



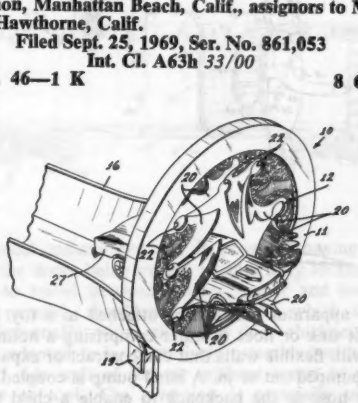
have turbulence—creating apertures, or may be of dished shape.

3,621,601
TOY
Allen Greenberg and Harry Meth, Cincinnati, Ohio, assignors to General Mills Fun Group, Inc., Minneapolis, Minn.
Filed Jan. 31, 1969, Ser. No. 795,666
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 R **12 Claims**



A toy which includes an elongate base member and a plurality of flat plate members or chips pivotally attached to the top surface of the base. A plurality of spaced apart openings are provided in the top surface, and each chip is connected to the base so that it engages one of the openings. In assembled relationship, the chips are pivotable between inclined and upright positions, and they are separable from the base member with a minimum amount of effort.

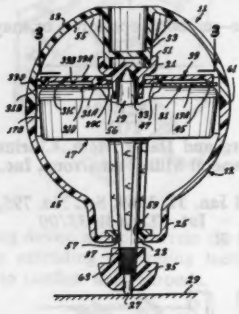
3,621,602
TRACK MEANS COMBINED WITH SIMULATED STUNT HOOP FOR TOY VEHICLES
Jack L. Barcus, Palos Verdes Peninsula, and Lester T. Stormon, Manhattan Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Sept. 25, 1969, Ser. No. 861,053
Int. Cl. A63h *33/00*
U.S. Cl. 46—1 K **8 Claims**



A hoop or ring accessory for use with toy vehicles. The hoop is provided with an insert of flexible material imprinted with a flame pattern and cut so as to deflect

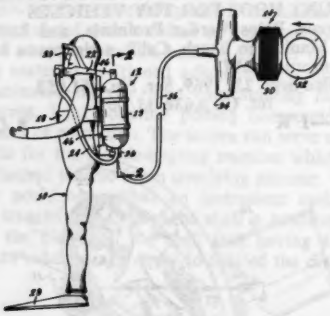
outwardly to allow a toy vehicle to pass therethrough thereby simulating the vehicle leaping or driving through flames.

3,621,603
COLOR CHANGING TOY TOP
Jacob de Gelder, Torrance, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Dec. 8, 1970, Ser. No. 96,196
Int. Cl. A63h *1/22*
U.S. Cl. 46—49 11 Claims



A toy top having a housing with a gyroscopic-type rotor mounted on a freely rotatable shaft that extends below the housing and terminates at a spinning tip which supports the top in spinning engagement with a playing surface, the top includes a color disc rotating with the top's rotor and a substantially freely rotatable coaxially disposed apertured opaque disc positioned between the color disc and a transparent portion of the top's housing so that the apertured disc may rotate at a speed different from that of the color disc to provide the illusion, that the color disc is changing colors.

3,621,604
AQUANAUT TOY
Berne E. Danielsen, Pacific Palisades, and George E. Robson, Torrance, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Nov. 24, 1969, Ser. No. 879,237
Int. Cl. A63h *23/10*
U.S. Cl. 46—92 4 Claims

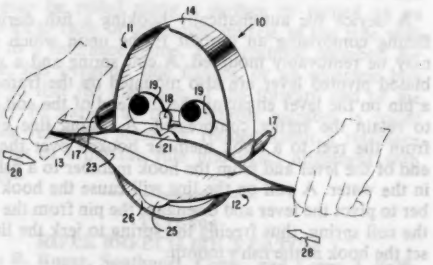


Toy apparatus that can be attached to a toy figure to make it sink or float in water comprising a hollow backpack with flexible walls that can contract or expand when air is pumped out or in. A hand pump is coupled through a long hose to the backpack to enable a child to pump air into or out of the pack. The pack is attached to the figure by a strap that extends around the figure's body, and a hose extends from the pack to a face mask that is attached to the figure's head.

3,621,605
REMOTE-CONTROL DEVICE FOR SPINNING TOPS
John Dale Witiak, P.O. Box 5024, Milwaukee, Wis. 53204
Filed Dec. 16, 1969, Ser. No. 885,547
Int. Cl. A63h *33/26*
U.S. Cl. 46—45 10 Claims

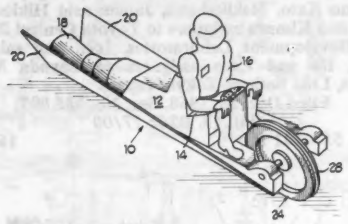
A device used for either amusement purposes or for physical therapy, including one or more spinning tops, each of which has at least a portion fabricated from a metallic material, and means for selectively controlling the rotation of the tops from a remote location, including a manually-operable control member for each top and a mechanical linkage connecting each respective control member and its associated top, each linkage incorporating a magnet adapted to selectively engage the metallic portion of the top.

3,621,606
SOUNDING FAVOR WITH REPRESENTATION OF A FANCIFUL CHARACTER
Stanley G. Potrzuski, 452 Elrino St., Baltimore, Md. 21224
Filed Oct. 22, 1969, Ser. No. 868,531
Int. Cl. A63h *5/00*
U.S. Cl. 46—118 9 Claims



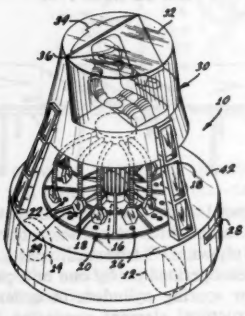
A sounding party favor having a pair of thin, elongate strips of firm, flexible material secured in superposed relation at their opposite ends, the intermediate portions of which may be separated by moving the ends inward toward each other and upon outward movement of said ends in a rapid fashion away from each other will produce a slapping sound. The motion of the strips and the sound produced thereby are related to a fanciful character in which a mouth is formed from the strips and head and jaw appendages are secured to the strips.

3,621,607
SELF-PROPELLED TOY VEHICLE
Howard J. Morrison, Highland Park, and Marvin I. Glass, Chicago, Ill., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Dec. 15, 1969, Ser. No. 885,001
Int. Cl. A63h *17/00*
U.S. Cl. 46—206 11 Claims



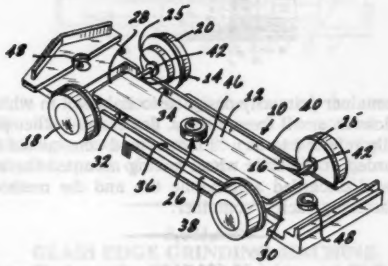
A self-propelled toy vehicle wherein the supporting and driving means also provides a gyroscopic effect on the travel of the vehicle. The toy vehicle has mounted thereon a single supporting wheel in the form of a rotatable flywheel, which is capable of storing sufficient energy to provide a gyroscopic effect on the vehicle when the rotating flywheel is placed on a supporting surface. In the illustrated embodiment, the flywheel is wound with a string, similarly to the winding of a gyroscopic top, and a launching device is also provided in order to facilitate launching the device in a balanced condition and along a straight line.

3,621,608
PROGRAMMABLE STEERING TOY VEHICLE
Denis V. Bosley, Palos Verdes Peninsula, Donald C. Hartling, Garden Grove, Richard E. Henderson, Huntington Beach, James F. Munday, Southgate, and Conrad B. Sloop, Huntington Beach, Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Mar. 2, 1970, Ser. No. 15,669
Int. Cl. A63r *17/00*
U.S. Cl. 46—206 10 Claims



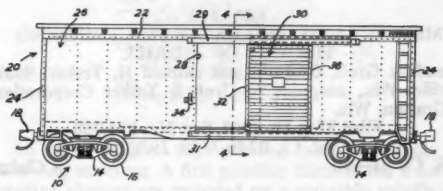
A toy vehicle which can be programmed to move in a desired course, by inserting plugs into appropriate holes in a programming wheel. The programming wheel has three concentric groups of holes, to receive plugs to designate a left turn, right turn, or straight-ahead movement. The programming wheel is slowely turned so that it makes one revolution while the vehicle makes one complete run along its route, the wheel bringing the plugs successively into position to direct the course of the vehicle. Two sets of cams positioned below the programming wheel are moved by the plugs to turn the vehicle wheels, each set of cams including a turning cam which can steer the vehicle at a predetermined angle, and a return cam which is struck by a plug a predetermined time after the turning cam is struck, to return the vehicle to its straight-ahead position after the vehicle has turned approximately 90° from its previous direction.

3,621,609
SPRUNG AXLE ASSEMBLY AND METHOD FOR TOY VEHICLES
Harvey W. LaBranche, Palos Verdes Peninsula, Calif., assignor to Mattel, Inc., Hawthorne, Calif.
Filed Apr. 15, 1969, Ser. No. 816,196
Int. Cl. A63h *11/10*
U.S. Cl. 46—201 11 Claims



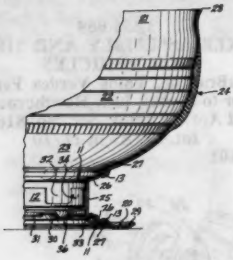
A toy vehicle in which axle wires are molded into a thin block of resilient plastic to keep the axles well aligned. The block is attached to the vehicle frame at its center, so the opposite ends wherein the axles are held are free to deflect upwardly, thereby permitting greater wheel deflection by a child pressing down on the vehicle without causing deflection of the axles past their elastic limit.

3,621,610
MODEL RAILWAY BOX CAR WITH SLIDING DOORS
Clarence K. Edwards, 865 Morrison St., and Lawrence D. Edwards, 2816 Rosemont Ave., both of Medford, Oreg. 97501
Filed Apr. 3, 1970, Ser. No. 25,309
Int. Cl. A63h *19/16*
U.S. Cl. 46—218 5 Claims



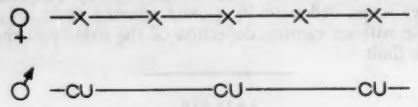
A model railway box car is provided having sliding doors, the doors being guided by interiorly located guide means to travel between narrow, upper and lower external, parallel, shouldered guide ribs, which ribs are not substantially wider than the door thickness. Each door is adapted to be operatively assembled with the associated side wall of the car without resort to any implement or tool. The invention is especially useful in very small scale equipment such as N-gauge, where even the finest scale, external, channeled guides would project objectionably, offsetting the realistic effect sought to be produced by the provision of sliding doors.

3,621,611
CONTAINER FOR PLANTS AND OTHER MATERIALS AND METHOD OF MAKING SAME
Jacob Wingerter, 9504 Maple SW., Tacoma, Wash. 98499
Filed Oct. 14, 1970, Ser. No. 80,579
Int. Cl. A01g *9/02*; A01k *5/00*
U.S. Cl. 47—34 11 Claims



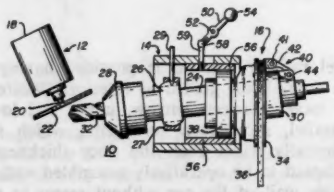
A container primarily designed to hold soil in which to plant flowers, small trees, shrubs, flowers and other plants generally referred to as a "Planter" and constructed from a discarded automobile wheel having mounted thereon a worn and discarded automobile tire and the method of manufacturing such a container.

3,621,612
PROCESS OF REGULATING PLANT GROWTH
Frederic E. Porter, Minneapolis, Minn., assignor to Northrup, King & Co., Minneapolis, Minn.
Filed Apr. 24, 1970, Ser. No. 31,499
Int. Cl. A01c *1/06*
U.S. Cl. 47—58 9 Claims



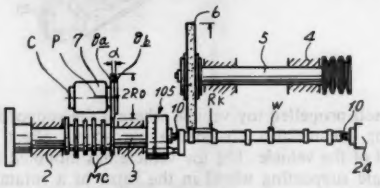
Seeds (e.g. seed corn) are coated to retard or delay emergence of the seedlings following planting. Then, coated seeds are planted in competitive proximity to uncoated seeds to permit competition between the resulting seedlings, thereby preserving through the flowering and maturation phases of growth the time lag or delay caused by the coatings.

3,621,613
METHOD AND APPARATUS FOR THINNING THE WEB OF A DRILL
Theodore Grob, Grafton, and Donald H. Tesker, Saukville, Wis., assignors to Grob & Tesker Corporation, Grafton, Wis.
Filed May 15, 1969, Ser. No. 824,758
Int. Cl. B24b *3/28, 19/02*
U.S. Cl. 51—90 8 Claims



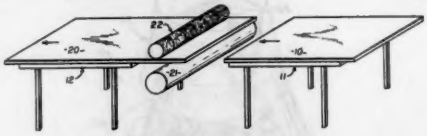
To thin the web of a drill, the drill is orbited so that, once during each orbit, its web contacts a rotating grinding wheel that is positioned approximately at a 25-degree angle from the horizontal. The grinding wheel abrades the web to form a recess having a radius determined by the radius of the orbit. The raduis of the orbit may be adjusted while the drill is orbiting.

3,621,614
CAM GRINDING MACHINE
Ryotaro Hikita, Riichi Takahashi, Rokuro Kimura, Mikishi Kurimoto, and Teruyuki Ito, Nagoya-shi, and Sadamu Kato, Hekikai-gun, Japan; said Hikita, Takahashi and Kimura assignors to Toyota Central Research and Development Laboratories, Inc., and said Kurimoto, Ito and Kato assignors to Toyoda Machine Works, Ltd., both of Tokyo, Japan
Filed Dec. 23, 1968, Ser. No. 785,897
Int. Cl. B24b *17/00*
U.S. Cl. 51—101 R 16 Claims



A cam grinding machine for grinding a cam on a workpiece while copying or duplicating a master cam. The machine is equipped with an apparatus for substantially compensating lift error on a workpiece due to grinding wheel wear, said apparatus being provided with a plurality of cam rollers having different diameters including a cam roller which engages with a master cam or master cams, said cam rollers being automatically or manually changed when the grinding wheel diameter is reduced by a predetermined extent, whereby the lift error on the workpiece is substantially compensated.

3,621,615
APPARATUS AND METHOD FOR THE MANUFACTURE OF A TEXTURED PANEL
Lester V. Ottinger, Danbury, Conn., assignor to U.S. Plywood-Champion Papers Inc., New York, N.Y.
Filed Nov. 26, 1969, Ser. No. 880,340
Int. Cl. B24b *1/00*
U.S. Cl. 51—5 3 Claims

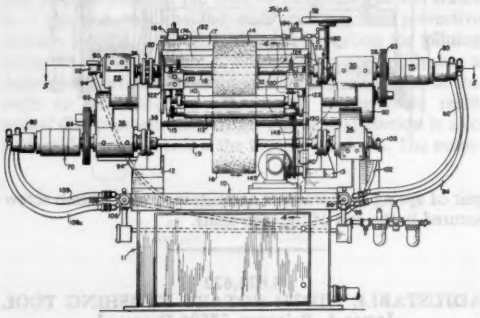


Textured panel and apparatus and method for manufacturing the same which comprises a fibrous board such as lumber, plywood, hardboard, particle board, etc. which has been operated on by one or a plurality of scoring sleeves or scoring cylinders in order to produce a decorative structural element appearing to have a plurality of parallel sections with a weathered barnboard appearance.

3,621,616
SURFACE PROCESSING MACHINE
James W. Weatherell and Francis R. Chesner, Olean, N.Y., assignors to Clair Mfg. Co., Inc., Olean, N.Y.
Filed Apr. 3, 1970, Ser. No. 25,432
Int. Cl. B24b *7/00*
U.S. Cl. 51—87 10 Claims

A machine for simultaneously grinding, abrading, deburring, or otherwise surface-processing both sides of cut-to-length sheet, plate, strip, continuous coil, or other

type workpieces; featuring self-dressing oppositely rotating processing rolls, and stirrup plates at opposite sides of the machine which mount an improved workpiece transport "pinch" roller drive system, permitting adjustments

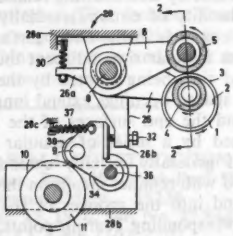


thereof so as to prevent "skipping" of the workpiece as it travels through the processing roll gap and thereby ensuring equal and smooth processings of opposite sides of the workpiece throughout its length.

3,621,617
MACHINING APPARATUS

Theo Muller, Pattscheid, Germany, assignor to Goetzewerke Friedrich Goetz Aktiengesellschaft, Burscheid, Germany

Filed Sept. 2, 1969, Ser. No. 854,493
Claims priority, application Germany, Aug. 30, 1968, P 17 77 065.9
Int. Cl. B24b *17/02*
U.S. Cl. 51—101 R **8 Claims**



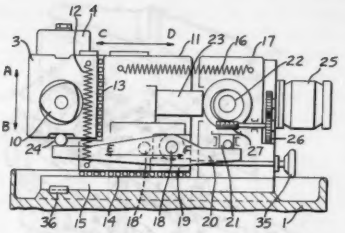
Apparatus is provided which can simultaneously machine the inner and outer surfaces of non-circular hollow bodies, such as piston rings, which are made with small departures from circularity. At least the inner machining tool is a rotating grinding wheel. Means are also provided to radially adjust the machining tools relative to the axis of the bodies to be ground.

3,621,618
APPARATUS FOR PRODUCING AND MACHINING CYCLIC NON-ROUND PROFILES

Curt Pleger, Oberrieden-Zurich, Switzerland, assignor to Fortuna-Werke Maschinenfabrik Aktiengesellschaft, Stuttgart-Bad Cannstatt, Germany

Filed Sept. 29, 1969, Ser. No. 861,607
Claims priority, application Germany, Oct. 1, 1968, P 18 00 349.1
Int. Cl. B24b *17/02*
U.S. Cl. 51—101 **10 Claims**

An apparatus wherein a tool forms a non-circular profile on a rotating workpiece. The workpiece is mounted on a workpiece spindle and an eccentric control cam is mounted on a control spindle which is parallel to and spaced from the workpiece spindle. A push rod and a lever engage the control cam and impart motion to the workpiece spindle in two directions at right angles to each

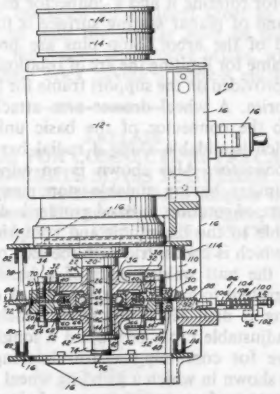


other in a plane normal to the axis of the workpiece spindle The workpiece spindle and the control spindle are drivingly interconnected so the speed of the former equals the speed of the latter multiplied by a whole number.

3,621,619
GLASS EDGE GRINDING MACHINE

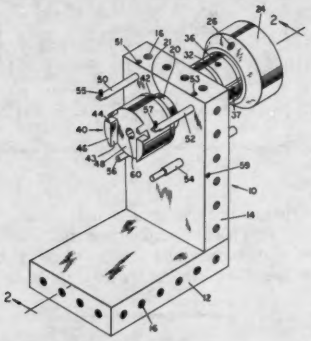
Eugene H. Augustin, Dearborn Heights, and Richard M. Kudrzycki, Detroit, Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 13, 1970, Ser. No. 27,558
Int. Cl. B24b *9/10*
U.S. Cl. 51—102 **9 Claims**



An improved glass edge grinding machine includes the following structure. A first grinding element and a second grinding element are mounted on a rotatable spindle and the elements have exposed circumferential surfaces for contacting opposed corners of an edge of a glass sheet. The grinding elements are mounted about an axis of the spindle in a spaced relationship such that the exposed circumferential surface of each element presents a continuous grinding surface for one of the corners of the edge of the glass sheet. A positioning device is located in the space between the grinding elements. The positioning device engages the central portion of the edge of the glass sheet placed between the grinding elements to position the corners of the glass sheet with respect to the grinding elements. In such a manner, the grinding elements accurately grind the corners of the glass sheet and remove the proper amount of stock therefrom.

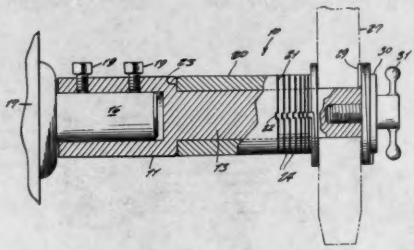
3,621,620
MACHINING TOOL
Merle Leslie Kinder and Merle Leslie Kinder II, Columbus, Ohio, assignors to Ohio Machine Tool Products, Inc., Columbus, Ohio
Filed Mar. 20, 1969, Ser. No. 808,833
Int. Cl. B24b *41/06, 53/12*
U.S. Cl. 51—216 R 11 Claims



A basic rotatable workpiece and tool holder is disclosed along with several attachments. The basic unit has a support frame to which an arbor is mounted in a bearing. The arbor has a thrust adjustment comprising an annular longitudinally tapered groove surrounded by a collar. The collar is provided with set screws seating against the groove. A hand gripped knob is provided at one end of the arbor for rotating it and a connector having intersecting slots and of planar seating surface is fixed to the opposite end of the arbor. Stop pins are provided on the support frame for limiting the arc of rotation, and threaded bores are provided on the support frame for the attachment of accessories. A wheel dresser arm attachment is connectible to the connector of the basic unit. A V block clamp which is slidable along a radial bar is mountable on the connector. Also shown is an adjustable arc of rotation limiter having slidable stop pins adjustable to a desired arc of rotation. A band grinder is disclosed which is attachable to the basic unit and comprises an arcuate platform which is concentric with the axis of rotation and on which the butt welded ends of a band are clamped and then ground to a uniform thickness. A drilling fixture for guiding a drill bit is disclosed which comprises a laterally adjustable cross beam and a longitudinally slidable sleeve for containing a drill bushing. A grinding method is shown in which a grinding wheel is first dressed to an arcuate surface and then a workpiece is grindingly rotated against this surface.

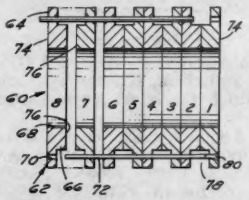
3,621,621
POWER TAKEOFF GRINDER
William Husack, Box 130, Calder, Saskatchewan, Canada
Filed Aug. 25, 1969, Ser. No. 852,737
Int. Cl. B24b *19/00, 41/00*
U.S. Cl. 51—258 2 Claims

An improved grinder secured to the power takeoff of a tractor, the grinder unit also including a stub shaft for positioning a grinding wheel a relatively far distance from a bearing of the power takeoff shaft where grinding work is readily more accessible, and the assembly also including a sleeve positioned adjacent a shoulder of the stub shaft and a plurality of washers positioned adjacent one end of the sleeve, the grinder disc being secured between a



pair of spring lock washers and retained by a thumb screw secured in the end of the stub shaft.

3,621,622
ADJUSTABLE WIDTH ROTARY FINISHING TOOL
James A. Belanger, 17502 Rexwood, Lavonia, Mich. 48152
Filed Sept. 10, 1969, Ser. No. 856,773
Int. Cl. B24b *9/02*
U.S. Cl. 51—337 2 Claims

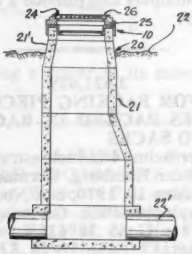


The adjustable width rotary finishing tool comprises a carrier or hub made from a plurality of discs or elements arranged in side by side abutting relationship. The hub includes a plurality of circumferentially extending endless grooves or channels in the outer surface of the hub. The hub includes annular rims adjacent the grooves, with the grooves and rims being formed by the discs. A plurality of radially spaced openings extend longitudinally through the rims and the end surfaces of the hub, each opening being defined by a series of annular bearing points. A plurality of generally radially extending finishing flaps are provided with retainer means on the inner ends thereof which extend into the grooves of the hub in alignment with the corresponding bearing points. Pivot pins extend through the openings and the retainer means of the flaps. With such a construction the finishing flaps and corresponding pins are arranged to pivot through a small predetermined angular movement to help maintain the wheel in proper balance. The length of the hub may be increased by adding discs to the hub or the length may be decreased by removing discs from the hub.

3,621,623
APPARATUS FOR TEMPORARILY CLOSING AN OPENING FORMED AT THE TOP OF VERTICAL WALLS OF A CATCH BASIN, MANHOLE OR THE LIKE
Allan MacMillan Downes, 2662 Draper Court, Ottawa 6, Ontario, Canada
Continuation-in-part of application Ser. No. 816,278, Apr. 15, 1969. This application Mar. 23, 1970, Ser. No. 21,790
Int. Cl. B65d *59/06*; E02d *29/14*
U.S. Cl. 52—20 11 Claims

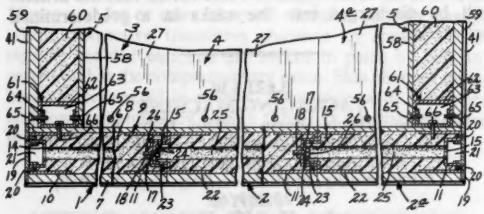
During construction of roads and the installation of public utilities (e.g. strom sewers, electric, gas and telephone services), the tops of vertical concrete walls of catch

basins, sewers, manholes etc., often protrude above ground level. A frame of a cover assembly is fixed to the top surfaces of these walls, the frame having a central opening for receiving a removable cover portion. Apparatus for temporarily closing the opening formed at the top of the vertical walls is disclosed comprising a protective member that is fixed between the tops of the walls and the frame in a position to close the wall opening, this protective member having a displaceable central portion for gaining access to the wall opening. The member preferably has a peripheral portion that embraces the tops and sides of the walls to establish firm engagement therewith to resist lateral displacement therefrom. The central portion is also preferably recessed below the tops of the walls. The mem-



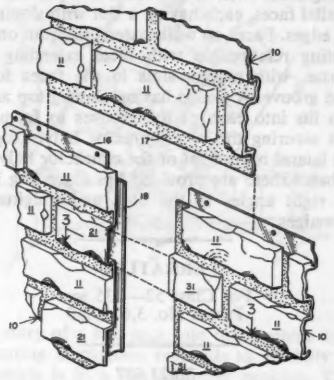
ber is of plastic material and in one embodiment, is initially of unitary construction, the central portion when it is to be displaced, being cut out from the remainder of the protective member. In another embodiment, the central portion is hinged to the remainder thereof, while in a third embodiment the central portion is formed separate from the remainder thereof so as to be removable and replaceable. The upper and lower surfaces of the peripheral portion are preferably ribbed to improve the sealing effect when the member is attached to the top surfaces of the walls, and the frame is then fixed to the upper surfaces of the protective member. The member thus serves to permanently seal the exposed tops of the walls of the catch basin, and also cushions vibration and shock between the iron frame and the concrete walls.

3,621,624
PANEL WALL CONSTRUCTION
Evert W. Gustafson, Box 1009, Fork Peck Highway, Glasgow, Mont. 59230
Filed Apr. 13, 1970, Ser. No. 27,844
Int. Cl. E04b *1/02, 7/02*
U.S. Cl. 52—90 **10 Claims**



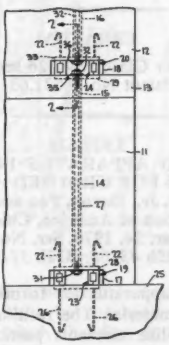
A plurality of panels of sandwich construction each having spaced wall elements, a core and a peripheral frame between the wall elements. The frame provides tongues and cooperating grooves for reception of the tongues of adjacent panels when the panels are disposed in end-to-end engagement. Anchoring screws extend through frame portions of adjacent panels to releasably lock the panels in wall forming end-to-end engagement.

3,621,625
BRICK SIDING
Robert S. Medow, 9225 Collins Ave., Surfside, Fla. 33154
Filed Aug. 17, 1970, Ser. No. 64,259
Int. Cl. B44f *9/04;* **E04c** *2/20*
U.S. Cl. 52—314 **2 Claims**



Brick siding for covering building walls simulating antique, used or old brick consisting of a plurality of rectangular sheets of fiberglass fastened to the wall with each horizontal row of sheets positioned in overlapping relation with the adjacent row, each sheet having formed thereon to simulate rows of old brick having chips, distress marks and the like thereon. In order to achieve authentic appearance that is in keeping with the aesthetics of proper masonry practices, the end bricks on alternate rows along one side of each sheet are grooved to receive the end portion of the bricks of an adjacent sheet so that these bricks appear to span the mortar joint of the adjacent rows of bricks, the tongue and groove bricks, when joined appear as a single brick having a distress mark.

3,621,626
SYSTEM FOR CONNECTING PRECAST CONCRETE SLABS TOGETHER
Adolfo Tylius, Washington, D.C., assignor to Alvic Development Corporation, Washington, D.C.
Filed May 7, 1970, Ser. No. 35,473
Int. Cl. E04c *1/10, 3/22*
U.S. Cl. 52—227 **9 Claims**



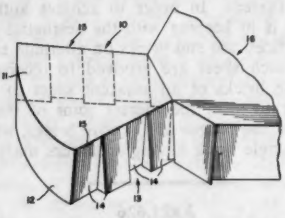
Precast concrete slabs of a building are connected together with coaxial tensioned rods extending through aligned, elongated bores, running between edges of the

slabs. In one of the slabs a cut-out is provided along one of the edges to receive one connector half fixedly positioned in the slab by tie-bars. A second connector half fixedly mounted on the other slabs projects into the cut-out of the first slab. Each connector half includes a base having a centrally located aperture therein for enabling a tensioned rod to be secured to an outer edge of the base. Extending from each of the bases is a pair of walls having parallel faces, each having a slot with sloping top and bottom edges. Faces on walls extending from one base are in abutting relationship with faces extending from the other base, with mating slots in the faces forming an enclosed groove. A wedge having sloping top and bottom surfaces fits into each of the grooves to form camming surfaces securing the two connector halves together. To prevent lateral movement of the connector halves, on one of the bases there are provided lips extending in a direction at right angles to the bore and longitudinal axes of the wedges.

ERRATUM

For Class 52—235 see:
Patent No. 3,621,635

3,621,627
REFRACTORY GRID
Walter W. Kramer, Allentown, Pa., assignor to Fuller Company, Catasauqua, Pa.
Filed Apr. 20, 1970, Ser. No. 30,117
Int. Cl. E04b *5/04;* **E04c** *2/04*
U.S. Cl. 52—608 **3 Claims**



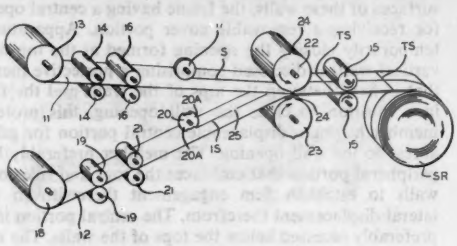
This invention relates to a refractory grid comprising a plurality of abutting sections, the side walls of each section which abut an adjacent section being formed of contiguous portions alternately beveled inwardly downwardly and outwardly downwardly from the top edge of the side walls.

ERRATUM

For Class 52—626 see:
Patent No. 3,621,631

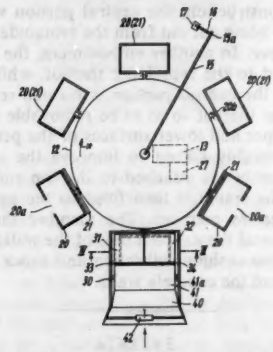
3,621,628
METHOD AND APPARATUS FOR FORMING CARRIERS FOR GROUPED ARTICLES
Francis A. Chidsey, Jr., Devon, Pa., assignor to Container Corporation of America, Chicago, Ill.
Filed Mar. 24, 1970, Ser. No. 22,222
Int. Cl. B65b *43/00;* **B32b** *31/08, 31/18*
U.S. Cl. 53—29 **10 Claims**

A method and apparatus for forming a carrier from webs of resinous material. The resultant carrier consists of conjugate tube-like elements particularly adapted to hold a group of containers such as bottles, cans or the like. The resinous material forming the carrier is in the form of a pair of webs which are appropriately slitted and sealed to form the tube-like elements which later are placed in position around a container group. The webs are preferably pre-stressed to make use of the memory characteristics of the material to cause them to snugly engage



the individual containers and provide a carrier for a group of such containers.

3,621,629
APPARATUS FOR PACKING PIECE GOODS SUCH AS POTATOES PACKED IN BAGS OR SIMILAR GOODS, INTO SACKS
August Wickersheim, 4 Industriestrasse, Egenbuttel, near Hamburg, Germany
Filed June 10, 1970, Ser. No. 44,912
Claims priority, application Germany, Oct. 3, 1969, G 69 38 621.6
Int. Cl. B65b *57/20, 5/10*
U.S. Cl. 53—59 **6 Claims**

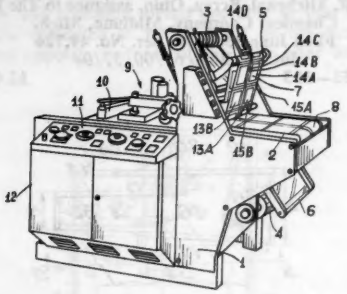


A semiautomatic packing apparatus with a rotary sack holder for holding a plurality of sacks and a transfer container for introducing piece goods or articles packed in bags into the sacks. Means are provided for coordinating the rotation of the rotary sack holder with the discharge of articles from the transfer container so that the articles will be discharged into the sacks in a predetermined orientation.

3,621,630
PACKAGING MACHINE
Giuseppe Bianchi, Busto Arsizio, Italy, assignor to S.p.A. Virginio Rimoldi & C., Milan, Italy
Filed Aug. 15, 1969, Ser. No. 850,528
Claims priority, application Italy, Sept. 7, 1968, 20,989/68
Int. Cl. B65b *31/04*
U.S. Cl. 53—112 A **6 Claims**

A packaging machine is provided including a loading station of articles to be packaged, a welding station for securing upper and lower films of packaging material about the articles, and means for advancing and cutting of the successive packages formed at the welding station. The advancing and cutting means include a sliding member movable in a feeding direction relative to the fixed structure of the machine and a clamp element in the form

of a transversal bar mounted on the sliding member. The clamp element and sliding element have splits for receiving and guiding a cutter in its movement across the feeding direction.



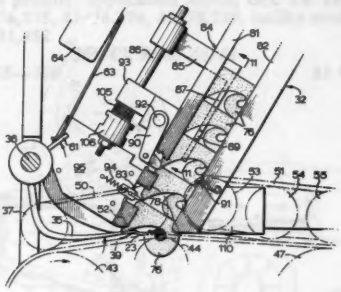
3,621,631
MOLDED DECORATIVE GRILLE
Norman Cutler, Wyncote, Pa., assignor to Royal Factories, Inc., Philadelphia, Pa.
Filed Nov. 13, 1969, Ser. No. 876,378
Int. Cl. E04c 2/42; F16s 3/08
U.S. Cl. 52—626 **4 Claims**

A decorative grille, primarily for storm doors or windows, in which the design is an interlocking composite of individual molded plastic scroll elements. The scroll elements have integrally formed outwardly extending pins and integrally molded tapered holes which snap into each other with an extruded rail bar sandwiched therebetween. Upper and lower rows of scroll elements slidably engage within respective transverse channels by means of integrally molded ears and are locked in place by bars inserted within the complementary space. Side channel members are connected in mitered disposition with the upper and lower channels by screws threaded into tapped holes in the ends of the bar to define a frame.

3,621,632
METHOD AND MEANS FOR APPLYING BAG CLOSURES OR FASTENERS
Stanley A. C. Browning, Glen Williams, Ontario, Canada, assignor to Hybrid Turkeys Limited, Toronto, Ontario, Canada
Filed Jan. 12, 1970, Ser. No. 2,325
Int. Cl. B65b 7/02
U.S. Cl. 53—138 A **12 Claims**

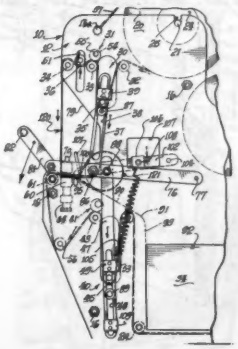
A novel method of a machine for applying closures of the form disclosed in Canadian Pat. 738,149, issued July 12, 1966, entitled "Bag Closure Fastener."

The machine employs the provision of a ground edge on the fastener and the characteristic facility of that fastener to flex while being applied to achieve a substantially continuous travel of the bag to which the closure is applied.



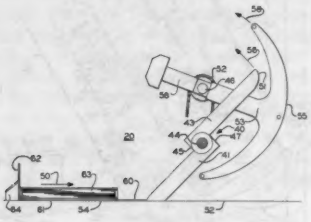
On the entry of a bag neck into the machine feed conveyor a cutting mechanism responds to partially sever a fastener which is in a bag receiving position. The feed gathers the bag neck into the bag receiving position where it is engaged by a second portion of the conveying mechanism and carried through a predetermined path. The fastener or closure is carried along in engagement with the bag neck through the rear edge of the closure being wedged down and the junction between the closure being applied and a succeeding closure is broken by the combined movement of the closure and the bag.

3,621,633
MACHINE FOR WRAPPING ARTICLES IN HEAT SEALABLE FILM
Raymond Thomas Law, Salinas, Calif., assignor to Lockwood Technical, Inc., Sand City (Seaside), Monterey County, Calif.
Filed Feb. 2, 1970, Ser. No. 7,572
Int. Cl. B65b 11/48, 41/16, 67/08
U.S. Cl. 53—198 R **7 Claims**



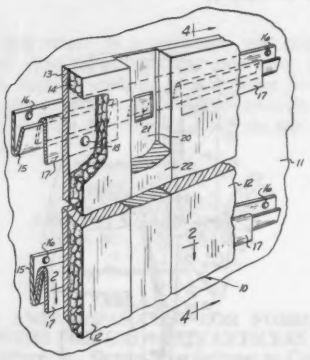
Heat sealable film is metered to an overwrap machine from two supply webs by mechanism coupled to the sealing frame by which the film is wrapped, cut and sealed. That metering mechanism permits accurate centering of a pattern preprinted on one of the supply webs. An auxiliary "tucker bar" is driven in response to sealing frame movement and aids wrapping of each article prior to sealing. A convenient and economical power assist mechanism is described.

3,621,634
AUTOMATIC FLAP FOLDER
Anthony Freakes, Leonia, N.J., assignor to General Corrugated Machinery Co., Inc., Palisades Park, N.J.
Filed June 1, 1970, Ser. No. 42,159
Int. Cl. B65b *11/10*
U.S. Cl. 53—209 7 Claims



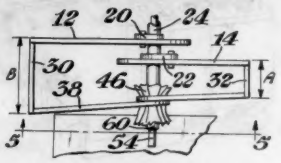
An automatic flap folder for folding the leading and trailing flaps of a paperboard sheet which is in the process of being transformed into a package. A rotating, leading flap folding arm and a rotating, arcuate, trailing flap folding arm are positioned on axes above a conveyor carrying the sheet and contents to be there enclosed. As the sheet passes toward and beneath the arms, the leading flap impinges upon the first folding arm and is turned over the contents of the package. Partially coincident with this operation, the arcuate arm engages the previously erected, trailing flap and in cooperation with continuing movement of the sheet folds the trailing flap over the package contents.

3,621,635
PANEL WALL
Cornelis J. de Lange, Farmington, Mich., assignor to Cement Enamel Development, Inc., Detroit, Mich.
Filed Mar. 2, 1970, Ser. No. 15,599
Int. Cl. E04b *2/88*
U.S. Cl. 52—235 5 Claims



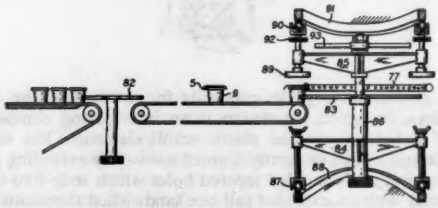
A monolithic aggregate textured type wall formed of large panels made of thin base sheets covered with a bonded textured coating, with the panels arranged edge to edge upon a support surface and mounted thereon by means of panel mounting strips having downwardly extending flanges interengaged with horizontally arranged J-shaped strips fastened to the support surface; the panel mounting strips being secured to the base sheets only by mechanical fasteners before coating the sheets, wherein the fasteners are covered and concealed by the coating.

3,621,636
DEVICE TO ASSIST AUTOMATIC VACUUMIZATION OF FILLED BAGS
Oliver R. Titchenal, Berea, Ohio, assignor to The Dow Chemical Company, Midland, Mich.
Filed June 25, 1970, Ser. No. 49,726
Int. Cl. B65b *65/00, 31/04*
U.S. Cl. 53—393 12 Claims



A device for automatically gathering the open end of a film bag about a vacuum or gas flushing nozzle or like means of a type such as is inserted into the bag to effect a certain environment therein. Such a device basically comprises a strap and a pair of movable arm members. The arm members move to tightly wrap the strap about the nozzle with the bag being held firmly underneath the strap, and thus tightly against the nozzle. The arm members maintain the strap so positioned until vacuumization and/or gas flushing is completed and the bag closed such as by clipping, tying or the like.

3,621,637
APPARATUS FOR FORMING CLOSURES
Martin M. Sternau, Flushing, N.Y., assignor to W. R. Grace & Co., Duncan, S.C.
Continuation of application Ser. No. 508,639, Oct. 23, 1965, and a continuation-in-part of application Ser. No. 209,882, July 16, 1964. This application June 16, 1970, Ser. No. 48,902
Int. Cl. B65b *7/16*
U.S. Cl. 53—329 1 Claim

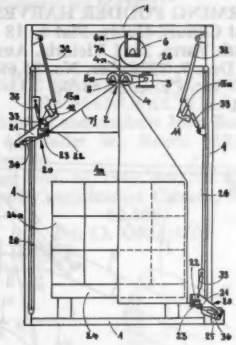


An apparatus for forming covers on containers comprising vertically movable shielding heads to hold a heat shrinkable covering film thereon and means to rotate the shield and container while heat is applied to shrink the exposed edges of the film against the side of the container.

3,621,638
APPARATUS FOR COVERING PALLETS WITH TUBULAR SHAPED FOIL OR SHEETING
Diethelm Grocke, Schnieglinger Strasse 132, Nuremberg, Germany
Filed Dec. 9, 1969, Ser. No. 883,436
Claims priority, application Germany, May 9, 1969, P 19 23 672.7
Int. Cl. B65b *1/02*
U.S. Cl. 53—386 17 Claims

Apparatus for applying a flattened foil tube particularly of shrinkable foil over a loaded pallet supported on

a frame in which the flattened tube is fed to units movably connected with the frame for movement toward and away from the fed tube, with such units having suction air inlets and clamping means operable so that the tube is initially separated or pulled apart by the suction air action on opposite surfaces of the tube after which the

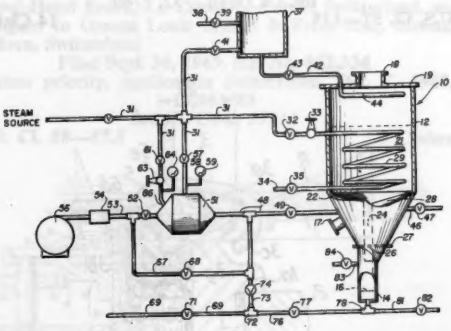


clamping means functions to clamp the tube and further separate the tube with the air suction inlets being inactive and further gripping means movable toward and away from the units being effective to grip the thus separated tube and after inactivation of the clamping means move the tube to a position covering the loaded pallet.

ERRATUM

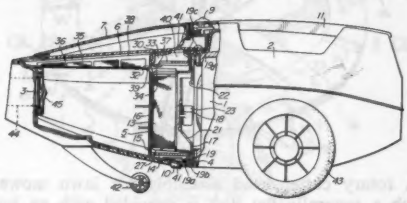
For Class 55—234 see:
Patent No. 3,621,834

3,621,639
DUST FILTER APPARATUS UTILIZING GRANULAR SOLID FILTER MEDIA
Edwin F. Edwards, Whittier, Jun Fukuzawa, Monterey Park, and Robert L. Solnick, Newport Beach, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission
Filed Nov. 26, 1969, Ser. No. 880,040
Int. Cl. B01d *25/06*
U.S. Cl. 55—243 **5 Claims**



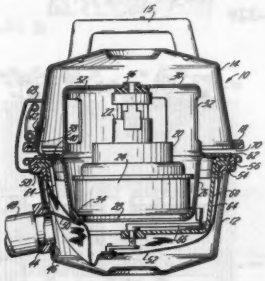
Apparatus for filtering dust from a stream of gaseous medium using granular siliceous filter media with provision for regeneration by means for immersion of media in water with controlled gas flow agitation, followed by means for drying with heated gas flow.

3,621,640
ELECTRIC VACUUM CLEANER
Hiroshi Ohno, Amagasaki-shi, Katuo Sawada, Suita-shi, and Chuzi Takeda and Kenji Okano, Toyonaka-shi, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan
Filed Oct. 8, 1969, Ser. No. 864,686
Claims priority, application Japan, Oct. 14, 1968, 43/76,275, 43/76,276, 43/79,739, (utility model) 43/91,452
Int. Cl. B01d *46/02*
U.S. Cl. 55—300 **11 Claims**



A vacuum cleaner comprising a body housing an electric fan and a dust collecting vessel removably mounted in said body, said dust collecting vessel having a suction port at a front end thereof and a widely open rear end where a dust removing unit composed of a prefilter of rough meshes, a main filter of fine meshes and means for causing vibration of said main filter to shake off dust attached thereto is removably mounted. The dust collecting vessel is further provided with a bypass channel which compensates for a decrease of air flow through said prefilter due to dust accumulation, whereby a large dust collecting capacity is obtained.

3,621,641
ELECTRIC CLEANER
Hisao Takei and Satoru Kato, Gunma Prefecture, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 21, 1969, Ser. No. 878,836
Int. Cl. B01d *46/04*
U.S. Cl. 55—305 **4 Claims**

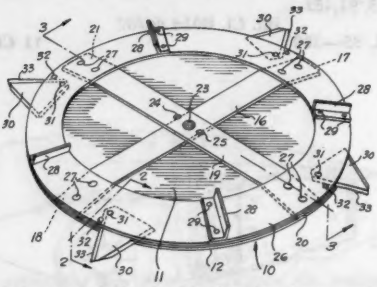


A flexible filter for straining out dirt sucked through rotation of an electric blower is disposed in opposite relationship with a rotatable dusting lever such that one portion of the filter is secured to that end eccentric to the center of rotation of the filter. The filter is rotated to vibrate, expand and contract the filter to remove the dirt stuck to the filter from it.

3,621,642
ROTARY CUTTER HEAD ASSEMBLY FOR LAWN MOWERS

Harry A. Leake, Jr., Rte. 1, Box 143, Shawsville, Va. 24162

Filed Oct. 9, 1970, Ser. No. 79,422
Int. Cl. A01d 55/18
U.S. Cl. 56—295 5 Claims

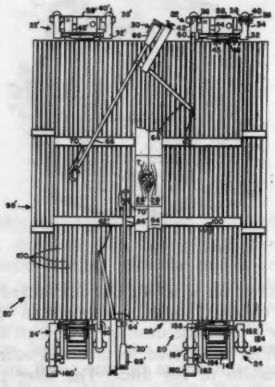


A rotary cutter head assembly for lawn mowers in which a generally flat disk is provided with an integral downwardly sloping annular ring. A pair of crossed bars are arranged perpendicularly to each other and extend radially outwardly to the outer edge of the disk. The bars have downwardly sloping outer end portions contacting the downwardly sloping annular ring on the disk. A downwardly sloping annular ring having a diameter the same as the downwardly sloping annular ring formed on the disk is arranged in spaced parallel relation thereto contacting the upper faces of the bars. The two annular disks are secured together with rivets passing through the ends of the bars. Upstanding air impeller members are secured to the upper surface of the annular disk. A plurality of cutter blades are pivotally mounted between the annular rings for movement to a position between the annular rings when striking an unyielding object. Centrifugal force normally holds the cutter blades in extended position against a stop provided a limit the movement of the cutter blades outwardly while the bars are positioned to serve as a stop to limit the movement of the blades inwardly.

3,621,643
SOFT FRUIT HARVESTER

William A. Gerrans, 15 Florimond Drive, Colusa, Calif. 95932

Filed Feb. 3, 1969, Ser. No. 795,821
Int. Cl. A01g 19/08
U.S. Cl. 56—329 15 Claims

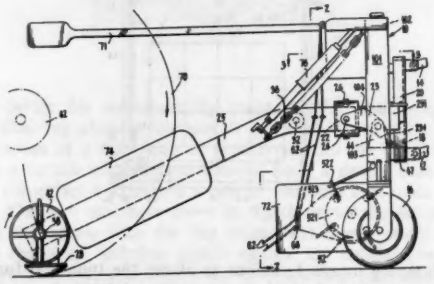


A harvester for peaches or other soft fruits which includes a fruit-catching draper conveyor with fruit-decelerating means thereover supported between two steerable wheel trucks, one of which carries a movable tree shaker, the fruits dislodged by the shaker and dropping onto the draper conveyor being movable away from the tree for subsequent conveyance and deposit in a fruit bin.

3,621,644
ROLL FORMING FODDER HARVESTERS

William Richard Clifford Geary, Flat 4, 18 Kensington Road, South Yarra, 3141 Victoria, Australia

Filed Dec. 7, 1970, Ser. No. 95,685
Int. Cl. A01d 43/06
U.S. Cl. 56—341 10 Claims

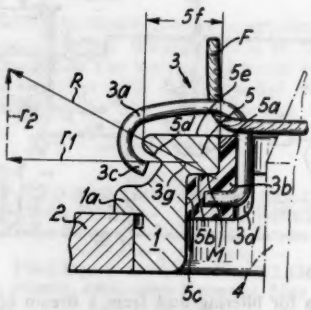


The invention relates to roll forming fodder harvesters having a frame adapted for attachment to the linkage of a towing tractor, and including a laterally spaced pair of longitudinally extending side arms which have their forward end portions pivoted to the frame to enable their free rear ends to swing upwardly and downwardly about a transverse axis. The free rear ends of the arms rotatively support transversely extending windrow winding means adapted to progressively roll up a swathe of mown fodder as it lies on the ground thereby to form a roll which rolls along the ground and which progressively raises the side arms as it increases in diameter.

3,621,645
RING AND TRAVELLER FOR RING SPINNING MACHINES AND THE LIKE

Stefan Fürst, Monchen-Gladbach, Germany, assignor to Reiners & Fürst, Monchen-Gladbach, Germany

Filed Jan. 28, 1969, Ser. No. 794,540
Claims priority, application Germany, Feb. 8, 1968, P 16 85 963.5
Int. Cl. D01h 7/52, 7/60
U.S. Cl. 57—119 14 Claims



The ring of a ring and traveller assembly for a ring spinning or twisting machine has an annular and substantially horizontal flange along which the travel path of a generally C-shaped traveller extends. The appertaining traveller has

a foot of synthetic plastic engageable with the ring and a thread guiding eye of wear resistant material, such as steel wire, joined with the foot. The main contacting contour of the fot has an angular shape whose upper leg portion extends vertically toward the top of the ring flange. The lower leg of the angular shape extends substantially in a horizontal direction. Preferably the contacting contour has a further substantially vertical portion below the horizontal leg portion.

3,621,646
COMPOSITE FIBRID YARNS AND METHOD OF MANUFACTURE

Emilian Bobkowicz and Andrew John Bobkowicz, both of 1435 St. Alexander St., Room 310, Montreal 111, Quebec, Canada

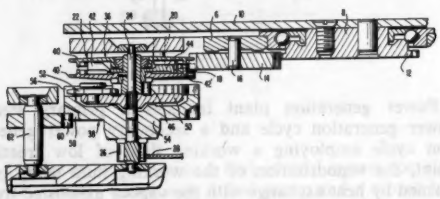
Filed Nov. 24, 1969, Ser. No. 879,454
Claims priority, application Canada, Sept. 15, 1969, 62,054
Int. Cl. D02g *3/02*
U.S. Cl. 57—140 BY **13 Claims**

Novel composite yarn is produced which comprises a continuous polymer substrate constituent combined with fibrids which are embedded within the polymer substrate and consolidated therewith; these fibrids generally protrude outwardly from the polymer substrate constituent in the form of filamentous units having an average length of from ⅛ to ½ inch and a fineness of between 0.2 and 1 denier as well as a characteristic specific surface above 2 $m.^2/g.$; they impart to the composite yarn a fibrous surface texture; this novel yarn is produced by a process generally involving extrusion of the polymer substrate and combination as well as consolidation of the extruded substrate with the fibrid units through pressure and cooling.

3,621,647
SELF-WINDING ALARM-WATCH

Raoul-Henri Erard, La Chaux-de-Fonds, Switzerland, assignor to Omega Louis Brandt & Frere S.A., Bienne, Bern, Switzerland

Filed Sept. 30, 1969, Ser. No. 862,334
Claims priority, application Switzerland, Oct. 7, 1968, 14,883/68
Int. Cl. G04b *23/12*
U.S. Cl. 58—57.5 **9 Claims**

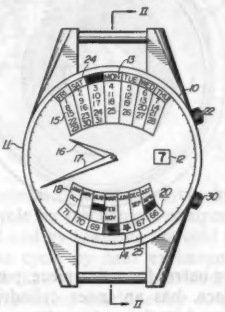


A self-winding alarm-watch including as a source of energy a single barrel, characterized in that the transmission of the self-winding mechanism and the transmission of the alarm-mechanism both consist of a single initial gear-train, going from the barrel ratchet-wheel and ending in a differential gear-system diverting the transmission towards the self-winding mechanism and the alarm-mechanism, respectively, so that they cooperate with the barrel independently of each other.

3,621,648
CALENDAR DEVICE IN WRISTWATCH

Tooru Takagi, Kokubunji, Japan, assignor to Orient Watch Co., Ltd., Tokyo, Japan

Filed Oct. 6, 1970, Ser. No. 78,400
Claims priority, application Japan, Apr. 16, 1970, 45/36,855
Int. Cl. G04b *19/24*
U.S. Cl. 58—58 **1 Claim**

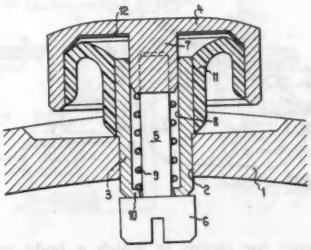


A calendar device in a wristwatch, which is designed to indicate the relationship between the days of the week and the dates in each calendar month for many years.

3,621,649
WATERTIGHT CONTROL MEMBER FOR WATCHES

Udrea Vulcan, Le Locle, and Etienne Cart, Bienne, Switzerland, assignors to Omega Louis Brandt & Frere S.A., Bienne, Bern, Switzerland

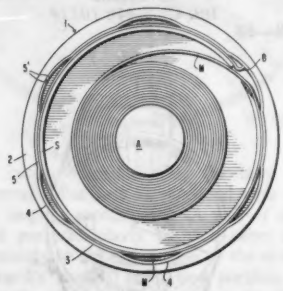
Filed Dec. 1, 1969, Ser. No. 881,228
Claims priority, application Switzerland, Dec. 18, 1968, 18,852/68
Int. Cl. G04b *37/08*
U.S. Cl. 58—90 B **8 Claims**



A watertight control member for watches, comprising a gasket which adheres on the one hand to the watchcase or to a part rigidly fixed to the watchcase and, on the other hand, to the movable portion of the control mem-

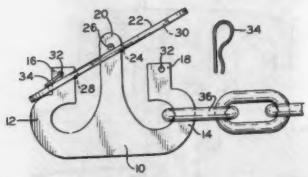
ber, the middle portion of said gasket being susceptible of deformation for permitting the actuation of the control member while continuing the ensure the watertightness.

3,621,650
BARREL FOR A SELF-WINDING TIMEPIECE
Eduard Schnyder and Christoph Bieri, Bienne, Switzerland, assignors to Omega Louis Brandt & Frere S.A., Canton, Bern, Switzerland
Filed Jan. 22, 1969, Ser. No. 792,963
Claims priority, application Switzerland, Jan. 26, 1968, 1,272/68
Int. Cl. G04b *1/18*
U.S. Cl. 58—87 7 Claims



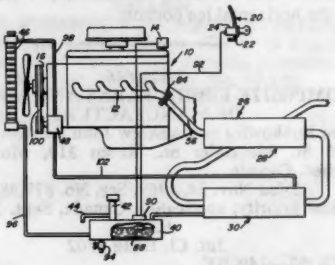
A main spring barrel for a timepiece, particularly a self-winding timepiece, has an inner cylindrical wall to be frictionally engaged by the main spring or a slip spring associated therewith to enable slipping of the main spring relative to the barrel when the main spring is sufficiently wound. The inner surface of the barrel has a hardness substantially equal to that of the main spring or the slip spring and has self-lubricating characteristics. The inner barrel wall or surface is provided with a relatively wide, shallow depression that extends outwardly beyond the cylindrical surface of the inner wall, and constitutes a deterrent to relative movement between the main spring or its slip spring and the inner barrel surface by providing gradually sloping or inclined areas over which the end of the spring, either main or slip spring, must pass.

3,621,651
CONNECTOR FOR CHAIN LINKS
Herman L. Gillespie, Fort Wayne, Ind., assignor to Hide-A-Way-Jax, Inc., Fort Wayne, Ind.
Filed Oct. 7, 1969, Ser. No. 864,481
Int. Cl. F16g *13/00*
U.S. Cl. 59—85 9 Claims



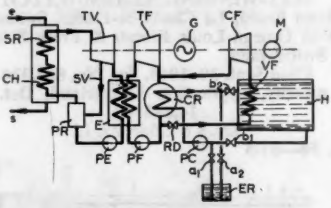
A connector for chains in which a body member is formed, as by stamping, so as to have hooks at the ends opening to the same side of the body member and a projection between the hooks and a keeper moveably captive on the projection. The keeper can be connected to the outer ends of the hooks to confine chain links therein and is releasable from the hooks to permit chain links to be removed from or placed in the hooks.

3,621,652
EXHAUST GAS WASHING APPARATUS
John S. DeMaree, P.O. Box 201, Georgetown, Tex. 78626
Filed July 2, 1970, Ser. No. 51,908
Int. Cl. F01n *3/04*; B01d *47/00*
U.S. Cl. 60—30 3 Claims



An exhaust gas treatment apparatus including a heat exchanger defining first and second passages extending therethrough in good heat transfer relation and an exhaust gas scrubbing chamber including water jet discharge means for water spray cleansing and cooling of exhaust gases passing through the scrubbing chamber. The exhaust gases to be treated are first passed through the first passage of the heat exchanger, through the scrubbing chamber and thereafter through the second passage of the heat exchanger. The supply of water for the water jet discharge means comprises at least a semi-closed system wherein the sprayed water is collected, cooled and then pumped back through the water jet discharge means.

3,621,653
POWER GENERATION PLANT
Pierre Henri Pacault, Ville d'Avray, and Francis J. Mary, Paris, France, assignors to Babcock-Atlantique Societe Anonyme, Paris, France
Filed Mar. 17, 1969, Ser. No. 807,511
Claims priority, application France, Mar. 25, 1968, 145,151
Int. Cl. F01k *23/00, 23/10*
U.S. Cl. 60—38 17 Claims



Power generation plant includes a primary steam power generation cycle and a secondary power generation cycle employing a working fluid of low freezing point, the vapourisation of the working fluid being performed by heat exchange with the vapour exhausted from the primary cycle. In addition, the plant includes a refrigerating cycle which is appropriate to lower the temperature at the cold source of the secondary cycle. This refrigerating cycle is intended to be brought into operation during the hours of slack demand for motive power.

3,621,654

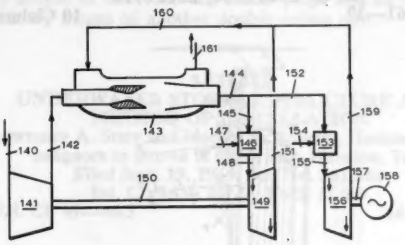
REGENERATIVE GAS TURBINE POWER PLANT

Francis R. Hull, 567 E. 26th St., Brooklyn, N.Y. 11210

Continuation-in-part of application Ser. No. 847,779, July 15, 1969. This application June 15, 1970, Ser. No. 45,969

Int. Cl. F02c 7/10

U.S. Cl. 60—39.15 27 Claims



This invention is directed to regenerative Brayton cycle gas turbine power plants of either the internal combustion type or the closed cyclic type wherein the compressed intake fluid stream is pre-heated through contact interchange in parallel flow with hot low-pressure turbine exhaust gases within velocity-accelerated contact-type heat exhangers. This invention is also directed to exhaust-fired gas turbine power plants wherein the compressed intake fluid stream is heated through contact interchange in parallel flow with high-temperature turbine exhaust gases directly following the combustion process within velocity-accelerated contact-type heat exchangers so as to limit both turbine inlet temperatures and the fouling of turbine blade surfaces.

3,621,655

FUEL CONTROL SYSTEM FOR A GAS TURBINE ENGINE

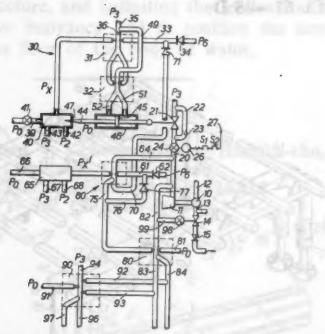
David J. Hawes, Derbyshire, England, assignor to Rolls-Royce Limited, Derby, Derbyshire, England

Filed Mar. 16, 1970, Ser. No. 19,713

Claims priority, application Great Britain, Mar. 27, 1969, 16,164/69

Int. Cl. F02c 9/06, 9/08

U.S. Cl. 60—39.28 10 Claims



The invention concerns a fuel control system for a gas turbine engine comprising a fuel pump and a closed loop fluid logic system including proportional amplifier means the output of which is connected to control the delivery of the said fuel pump, and the effective input of which is a function of jet pipe pressure and at least one compressor pressure.

3,621,656

GENERATION OF ENERGY IN A GAS CYCLE

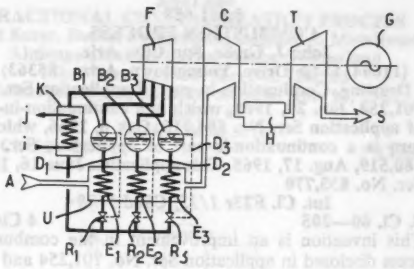
Pierre Henri Pacault, Ville d'Avray, and Francis J. Mary, Paris, France, assignors to Babcock-Atlantique Societe Anonyme, Paris, France

Filed Jan. 3, 1969, Ser. No. 788,748

Claims priority, application France, Jan. 10, 1968, 135,423

Int. Cl. F02c 7/14

U.S. Cl. 60—39.02 7 Claims



Energy is generated in a gas cycle by establishing a refrigeration cycle by mechanical compression of a cold-producing fluid and by lowering the cold source temperature of the gas cycle by heat exchange with the cold-producing fluid. The apparatus provided for this process includes a refrigerating machine for compression of the cold-producing fluid and means for performing a heat exchange between the same and the working fluid.

3,621,657

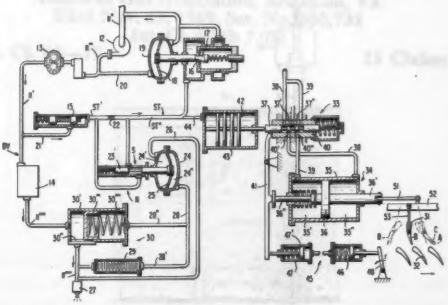
CONTROL INSTALLATION FOR THE AUTOMATIC ADJUSTMENT OF THE MOVABLE GUIDE BLADES, ESPECIALLY OF THE OUTPUT TURBINE OF A GAS TURBINE DRIVE UNIT

Wilhelm Jurisch, Nellingen-Parksiedlung, and Gerhard Walliser, Walblingen, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Sept. 25, 1968, Ser. No. 762,579

Int. Cl. F02c 3/10, 3/24; F02g 3/00

U.S. Cl. 60—39.16 24 Claims



A control installation for the automatic adjustment of the movably arranged guide blades, especially of the output turbine, of a gas-turbine drive unit which includes an output turbine mechanically separate from the gas producer and serving, in particular, for the drive of a

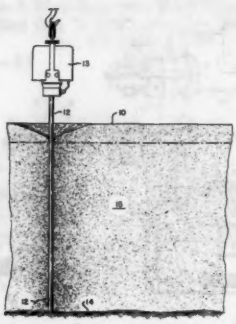
vehicle; the installation includes a system for producing control pressures corresponding to the respective guide blade adjusting program which, in turn, control the actuating mechanism for the guide blades to adjust the same to the predetermined positions; the control system is connected in particular with the fuel supply system of a gas turbine so as to utilize already existing parts.

3,621,658
COMBUSTION PROCESS
John J. Grebe, Sun City, Ariz.
(11604 114th Drive, Youngstown, Ariz. 85363)
No Drawing. Continuation-in-part of application Ser. No. 701,254, Jan. 29, 1968, which is a continuation-in-part of application Ser. No. 584,916, Oct. 6, 1966, which in turn is a continuation-in-part of application Ser. No. 480,519, Aug. 17, 1965. This application June 16, 1969, Ser. No. 833,770
Int. Cl. F23r *1/12*; C06d *5/08*
U.S. Cl. 60—205 **4 Claims**

This invention is an improvement in the combustion process disclosed in application Ser. No. 701,254 and Pat. No. 3,365,880 which comprise generally controllably introducing separately and sequentially predetermined amounts of a fuel and air or a preblended fuel-air combustion mixture and a mass of a displaceable inert mass, usually a gas, into a combustion zone and utilizing the heat of combustion from rapid combustion of the fuel-air combustion zone during operation with a magnetic field mass.

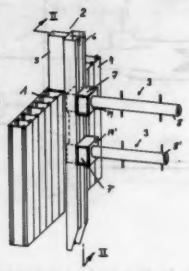
The present improvement comprises encompassing the combustion zone during operation with a magnetic field thereby confining and directing the combustion products toward the exhaust of said combustion zone and simultaneously generating electrical power therein.

3,621,659
METHODS OF SOIL COMPACTION
Robert D. Anderson, Pittsburgh, Pa., Alvin E. Herz, Nutley, N.J., Claborn Jones, Dawson, Ga., Harold Strickland, Gretna, La., and William K. Wilson, Mammouth, Ark., assignors to L. B. Foster Company, Pittsburgh, Pa.
Filed July 10, 1969, Ser. No. 840,619
Int. Cl. E02f *1/00*
U.S. Cl. 61—35 **7 Claims**



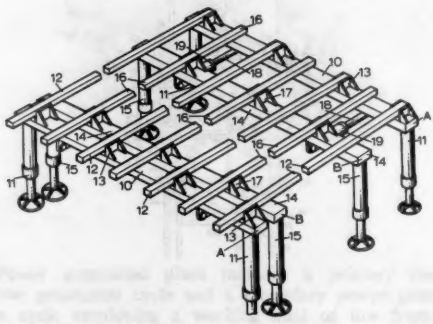
A method of compacting soil is provided using the steps of driving a probe into the soil to be compacted using a vibratory driver and extracting said probe using a vibratory extractor and repeating the same steps at spaced intervals over the area to be compacted.

3,621,660
BUILDING SET FOR THE SHEETING OF SERVICE DITCHES
Josef Krings, 23 Hans Bocklerstrasse, 5138 Oberbruch, Germany
Filed May 11, 1970, Ser. No. 36,112
Claims priority, application Germany, Nov. 8, 1969, P 19 56 337.2
Int. Cl. E02d *5/06*; E21d *5/10*
U.S. Cl. 61—39 **10 Claims**



This disclosure relates to sheeting for shoring ditches and similar embankments. In lieu of the usual arrangement in wooden timbers, or in the case of permanent sheeting, steel plates, each wall of the sheeting is formed of hollow steel sections joined together with there being disposed at regular intervals guide supports, each of which includes one leg which is receivable in the sheeting and a second leg which projects into the ditch and has received therein shoes of tightening devices. The guide supports are longer than the sheeting and project therebelow so as to provide support for the sheeting and to permit the additional driving of the sheeting as excavation proceeds without releasing the supporting pressure on the sheeting.

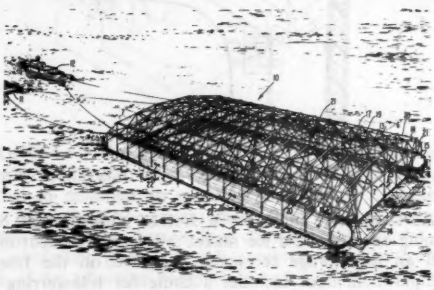
3,621,661
MINE ROOF SUPPORTS
Archelaius D. Allen, Leyland, England, assignor to Gullick Dobson Limited, Wigan, England
Filed Oct. 28, 1969, Ser. No. 871,862
Claims priority, application Great Britain, Nov. 5, 1968, 52,291/68; Aug. 26, 1969, 42,424/69
Int. Cl. E21d *15/44*
U.S. Cl. 61—45 D **13 Claims**



A mine roof support comprises two units which can be advanced relative to each other. The units have parallel roof beams extending in the direction of advance, those of each unit alternating in the breadth direction with those of the other unit. Each unit comprises two

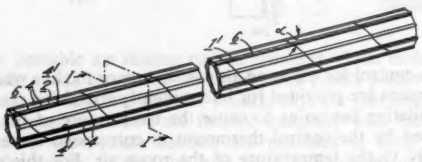
sub-units, each comprising a cross beam and supporting hydraulic legs (the sub-units being connected only by the roof beams of that unit), and can be advanced separately by a ram. The roof beams can have cantilever bars at their leading ends and means for raising permanent roof bars at their trailing ends. An anchor plate can be suspended in cradle-like manner from one unit by means of double acting staker props and be displaceable by means of another double acting ram.

3,621,662
UNDERWATER STORAGE STRUCTURE AND METHOD OF INSTALLATION
Lawrence A. Starr and Joseph W. Roberts, Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.
Filed Sept. 29, 1969, Ser. No. 861,560
Int. Cl. B63b *35/44*; E02b *17/00*
U.S. Cl. 61—46.5 **16 Claims**



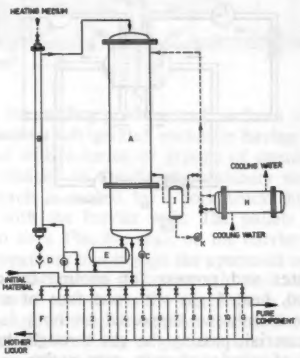
An underwater storage structure, for fluids such as oil which are immiscible with and of lesser specific gravity than water, is capable of being towed to a site and submersed to the floor of the body of water. The storage structure is made of concrete and has a truncated pyramidal shape with the interior of its lower portion in communication with the body of water. A tender frame having tanks for buoyancy and ballasting may be used to install the storage structure on the floor of the body of water. The installation procedure includes positioning the tender frame over the storage structure, tying the tender frame to the storage structure, flooding the storage structure, and ballasting the tender frame to achieve negative buoyancy and to position the storage structure on the floor of the body of water.

3,621,663
RIBBED PILE
Akemasa Otani, 4, 2-chome Asakusa Hashiba-cho, Daito-ku, Tokyo, Japan
Filed Mar. 13, 1969, Ser. No. 806,918
Int. Cl. E02d *5/28*
U.S. Cl. 61—53 **4 Claims**



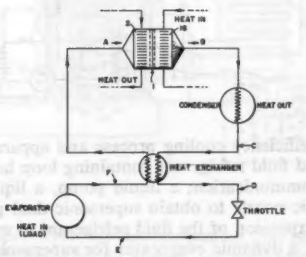
This low-cost, light-weight, high-strength, hollow cylindrical pile having longitudinal ribs is manufactured by rolling an elongated metal plate of predetermined width so as to produce spaced ridges thereon extending at a predetermined angle between lateral edges. The ridged metal plate is spirally wound so that the ridges register to produce longitudinally-extending ribs and the juxtaposed lateral edges are joined, preferably by welding, to form a continuous spiraled joint. When driven into a penetrable medium, the ribs provide directional control and means for joining adjacent piles into a unitary structure.

3,621,664
FRACTIONAL CRYSTALLIZATION PROCESS
Kurt Saxer, Buchs, Switzerland, assignor to Metallwerk Aktiengesellschaft Buchs, Buchs, Switzerland
Filed Apr. 11, 1968, Ser. No. 720,553
Claims priority, application Austria, Apr. 14, 1967, A 3,510/67
Int. Cl. B01d *9/00*
U.S. Cl. 62—58 **3 Claims**



A single or multiple-step fractional crystallization process and apparatus for separating fluid material having two or more components, the material flowing down a cooled wall surface and a component crystallizing thereon. Each step comprises a single crystallization and all steps of a complete cycle are conducted within a single crystallizer.

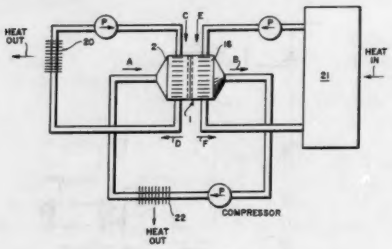
3,621,665
THERMAL PUMP AND PROCESS
Raghunath G. Mokadam, Chicago, Ill., assignor to American Gas Association, Arlington, Va.
Filed Nov. 28, 1969, Ser. No. 880,732
Int. Cl. F25b *7/00*
U.S. Cl. 62—79 **15 Claims**



Thermal pump and process for pumping gases by contacting a gas of relatively low pressure and low temperature with one face of a non-porous permeable membrane

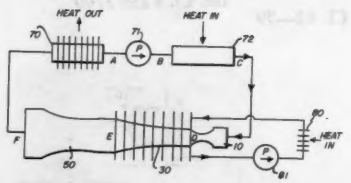
supported on both faces by rigid porous material, passing the gas through the membrane by means of solution therein, evaporating gas from solution in said membrane at the other face of said membrane, the evaporated gas being at a higher temperature and higher pressure than before its passage through the membrane, heat-exchange means being placed on both sides of the membrane.

3,621,666
COOLING APPARATUS AND PROCESS
Raghunath G. Mokadam, Chicago, Ill., assignor to American Gas Association, Arlington, Va.
Filed Nov. 28, 1969, Ser. No. 880,733
Int. Cl. F25b *1/00*
U.S. Cl. 62—79 **16 Claims**



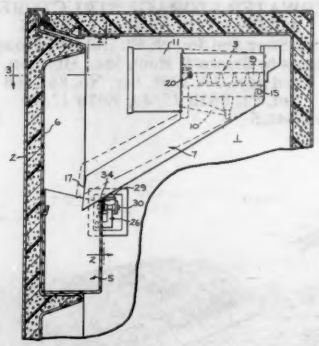
Apparatus and process for cooling by contacting a pressurized, heated gas with one face of a non-porous permeable membrane supported on both faces by rigid porous material, passing the gas through the membrane by means of solution therein, evaporating gas from solution in said membrane at the other face of said membrane, the evaporated gas being at a lower temperature and lower pressure than before its passage through the membrane, heat-exchange means being placed on both sides of the membrane.

3,621,667
COOLING APPARATUS AND PROCESS
Raghunath G. Mokadam, Chicago, Ill., assignor to The American Gas Association, Arlington, Va.
Filed Mar. 24, 1969, Ser. No. 809,521
Int. Cl. F25b *1/00*
U.S. Cl. 62—116 **10 Claims**



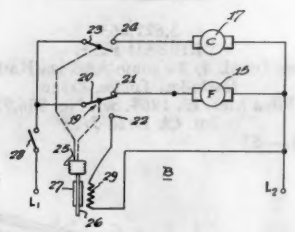
A high efficiency cooling process and apparatus utilizing a closed fluid refrigerant containing loop having a sequential communication; a liquid pump, a liquid heater, an adiabatic nozzle to obtain supersonic dual phase fluid flow and expansion of the fluid refrigerant to evaporation conditions, a dynamic evaporator for supersonic flow and in thermal exchange relationship with a confined volume to be cooled, a diffuser reducing the velocity of the fluid and increasing the pressure of the fluid to condensation conditions, and a thermal exchanger to condense the fluid to a liquid for recycling.

3,621,668
REFRIGERATOR INCLUDING AN AUTOMATIC ICE MAKER AND A DOOR MOUNTED ICE RECEPTACLE
Leo Swerbinsky, Louisville, Ky., assignor to General Electric Company
Filed Dec. 17, 1969, Ser. No. 885,711
Int. Cl. F25c *1/00*
U.S. Cl. 62—137 **6 Claims**



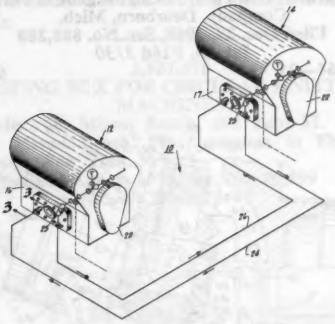
A refrigerator including a freezer compartment containing an automatic ice maker within the compartment and an ice storage receptacle mounted on the freezer compartment door includes a chute for transferring ice pieces from the ice maker to the storage receptable. The chute is pivotally supported and connected to the ice maker operating mechanism to provide a vertical movement of the outlet or receptacle end of the chute which is employed to sense the level of ice in the receptacle and stop operation of the ice maker when the receptacle is filled.

3,621,669
AIR CONDITIONER CONTROL
Duane C. Nichols and Edwin M. Marks, Evansville, Ind., assignors to Whirlpool Corporation
Filed Nov. 3, 1969, Ser. No. 873,448
Int. Cl. F25d *17/00*
U.S. Cl. 62—157 **9 Claims**



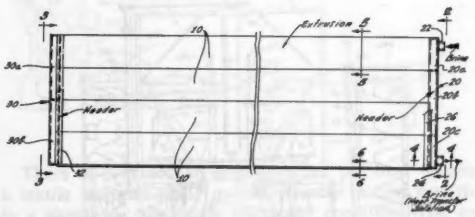
A control for use in an air conditioner or the like wherein means are provided for intermittently energizing the air circulating fan so as to cause the temperature of the air sensed by the control thermostat to correspond more directly to the temperature of the room air. For this purpose a low wattage heater is associated with the thermostat to heat the thermostat or heat the air adjacent the thermostat when the fan is de-energized and thereby cause the temperature sensed by the thermostat to reach a level sufficient to effect the intermittent operation of the fan.

3,621,670
LUBRICATING OIL EQUALIZING SYSTEM
Raymond W. Kinney, Milwaukee, Wis., assignor to Vilter Manufacturing Corporation, Milwaukee, Wis.
Filed Jan. 12, 1970, Ser. No. 2,022
Int. Cl. F25b *31/00*
U.S. Cl. 62—192 10 Claims



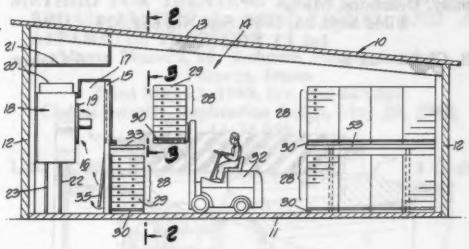
An oil level equalizing system interconnecting the compressor crankcases for a multi-compressor refrigeration system to maintain an equal level of oil in the crankcase of each of the compressors. The oil level control system includes a bypass line connecting the outlet of the lubricating pump on each compressor to the crankcase of an adjoining compressor and a liquid level operated valve responsive to the level of oil in the adjoining crankcase to control the admission of oil from the lubricating pump. The liquid level operated valve can be controlled by a float directly connected to open the valve or by a float switch connected to a solenoid valve located in the bypass line.

3,621,671
PORTABLE ICE SKATING RINK
William R. Ullrich, Van Nuys, Calif., assignor to Beverly Refrigeration Incorporated, Burbank, Calif.
Filed Dec. 15, 1969, Ser. No. 884,984
Int. Cl. A63c *19/10*
U.S. Cl. 62—235 4 Claims



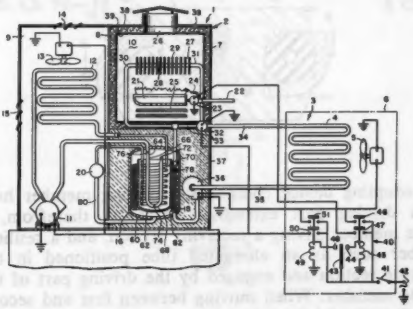
A portable ice skating rink is provided which includes a floor made up of a series of extruded panels placed adjacent one another. Tubular passageways for carrying the heat transfer solution are formed integrally with the extrusion. Appropriate headers are provided at each end of the panels so that the heat transfer solution may be circulated through the passageways in each of the panels and a freezing condition may be created to form ice on the top surface of the panels. Insulation and a bottom protective surface are applied to the underside of the panels to provide a complete ice rink system.

3,621,672
PRESSURE COOLING APPARATUS
Diven Meredith, 87–135 Ave. 56, Thermal, Calif. 92274
Filed June 1, 1970, Ser. No. 41,931
Int. Cl. F25d *27/00*
U.S. Cl. 62—237 14 Claims



Apparatus for cooling produce such as fresh vegetables or fruits includes a refrigerated enclosure having a barrier wall provided with a series of groups of openings. The produce is confined in apertured containers stacked on pallets and each is moved by a fork truck into lateral engagement with the barrier wall. The pallets are supported in two tiers. Flexible seals on the barrier wall encompass the openings and engage the apertured containers on one side. A fan causes air to move in a circuit including the apertured containers, the openings in the barrier wall, and through a cooler-humidifier to cool the produce. The proximity of the stack or pallet opens an air valve which otherwise blocks flow of air through the wall openings adjacent the stack.

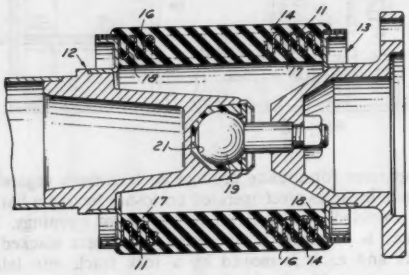
3,621,673
AIR-CONDITIONING SYSTEM WITH COMBINED CHILLER AND ACCUMULATOR
Harry D. Foust, Dakota, Minn., assignor to The Trane Company, La Crosse, Wis.
Filed Dec. 8, 1969, Ser. No. 883,140
Int. Cl. F25b *43/00*
U.S. Cl. 62—503 2 Claims



An outdoor hydronic heating-cooling unit provides hot and chilled liquid to an indoor fan coil unit. The outdoor unit has a compression cycle refrigeration system for cooling a liquid heat exchange fluid. The heat exchange liquid is cooled by passing it through a finned spiral tube disposed within the refrigeration system suction line accumulator. The outdoor unit also includes a liquid heater

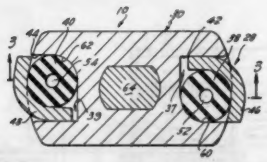
with gas burner. A single pump is used to circulate heat exchange liquid between the indoor fan coil unit and the outdoor heating and cooling unit. The liquid heater is arranged above the chiller-accumulator within a single enclosure.

3,621,674
REINFORCED BELLOWS UNIVERSAL JOINT
George Ulics, Plymouth, and Donald G. Wheatley, Orchard Lake, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Sept. 26, 1969, Ser. No. 861,329
Int. Cl. F16d 3/28
U.S. Cl. 64—11 B 6 Claims



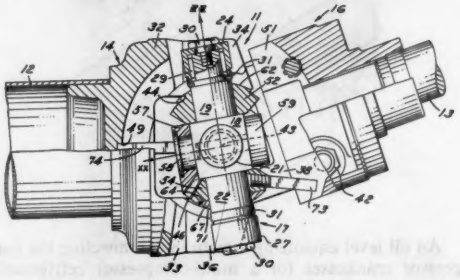
A universal joint assembly including a flexible, cylindrical torque transfer bellows which is reinforced by an elastomeric stiffener material received within the bellows grooves. The elastomeric material increases the torque capacity of the bellows by reducing torsional windup under high torque loads.

3,621,675
FLEXIBLE COUPLING DEVICE
Daniel J. Conaghan, Franklin, Robert W. Matthews, Norwood, and Brendon V. Tully, Dracut, Mass., assignors to Holtzer-Cabot Corporation, Boston, Mass.
Filed Apr. 13, 1970, Ser. No. 27,813
Int. Cl. F16d 3/64
U.S. Cl. 64—14 7 Claims



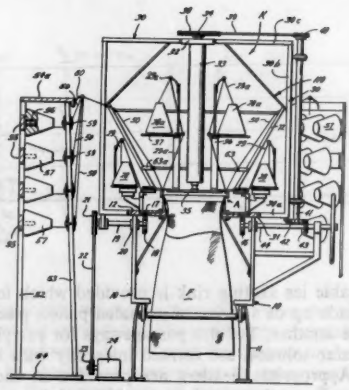
A coupling device comprises a driving member having a driving part extending outwardly therefrom, a driven member having a receiving section, and a resilient member such as an elongated tube positioned in the receiving section and engaged by the driving part of the driving member. When moving between first and second positions, the driving part compresses the resilient member and forces it against the driven member. The resilient member is composed of a compressible but sturdy material such as neoprene and is effective to transmit the driving force to the driven member, causing the driven member to also move. When the driven member reaches its seated or second position it is positively stopped. The driving member continues to move to reach its second position, compressing the resilient member. The driven member is thus resiliently held in its second position, wear of the second member and/or its seat is compensated for by expansion of the resilient member, and the driving member overtravel positively ensures actuation of external limit stops or the like.

3,621,676
CONSTANT VELOCITY TYPE UNIVERSAL JOINT
Moses Shachter, Oak Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 29, 1969, Ser. No. 888,280
Int. Cl. F16d 3/30
U.S. Cl. 64—21 6 Claims



A constant velocity type universal joint having a driving yoke, a driven yoke and a torque transmitting intermediate cross assembly. The cross assembly includes gear means having sliding contacts with the yokes which function to maintain the cross member in a plane forming an angle with the bisecting plane equal to one-half the acute joint angle.

3,621,677
APPARATUS FOR PRODUCING A KNITTED FABRIC INCLUDING INTERLACED INSERT ELEMENTS
Ronald H. Marks and Lawrence R. Goodman, Dallas, Tex., assignors to Enterprise Incorporated, Dallas, Tex.
Filed Aug. 6, 1969, Ser. No. 847,982
Int. Cl. D04b 9/16
U.S. Cl. 66—9 R 9 Claims



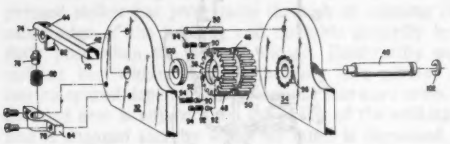
The invention relates to an apparatus for producing a fabric in which knitted yarn or yarn-like elements have a plurality of insert elements interengaged or interlaced therewith; said apparatus having an improved guide means

which positively guides the insert elements and maintains them in proper relationship to the courses of fabric as said courses are being knitted. The apparatus also includes an improved actuating and control means for actuating and controlling movement of the guide means, which actuating and control means is disposed exteriorly of the knitting needles of the knitting machine whereby a maximum number of insert elements in relationship to knitting machine size may be inserted and also whereby the central area or interior of said knitting machine is made more accessible.

3,621,678
STRIPING BOX FOR CIRCULAR KNITTING MACHINES

Lester Mishcon, Miami Beach, and Paul M. Wolford, North Miami Beach, Fla., assignors to The Singer Company, New York, N.Y.

Filed Apr. 9, 1970, Ser. No. 26,999
Int. Cl. D04b *15/58*
U.S. Cl. 66—138 **2 Claims**

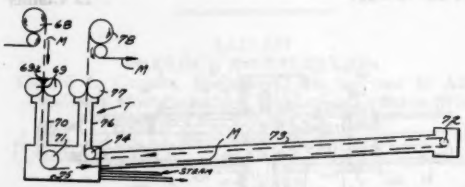


A striping box is compactly constructed in an improved manner to economize on the space required for such device on a kniting machine, and to provide for accurate positioning of the striping box drum as well as the maintenance of such drum in positively defined positions for periods of time.

3,621,679
CONTINUOUS LIQUID TREATMENT OF TEXTILE MATERIALS

James E. Greer, Box B2, Greensboro, N.C. 27402

Application Mar. 6, 1968, Ser. No. 716,256, which is a continuation-in-part of application Ser. No. 292,389, July 2, 1963. Divided and this application Oct. 31, 1969, Ser. No. 870,826
Int. Cl. D06c *1/00*
U.S. Cl. 68—5 E **11 Claims**

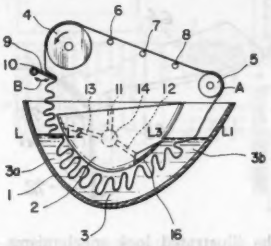


There is provided an apparatus for wet-heat treating a textile material while maintaining the textile material in a stretched, completely restrained condition. The apparatus comprises a treating vessel having an inlet and outlet for the textile material, means for introducing steam into the treating vessel and pressure sealing means for sealing the inlet and outlet to maintain an atmospheric pressure of up to 3 atmospheres within the treating vessel, while permitting the continuous passage of the textile material therethrough. Inlet restraining means are positioned exteriorily of the treating vessel and adjacent the inlet, for restraining the textile material passing into and through the treating vessel. Outlet restraining means are positioned exteriorly of the treating vessel and adjacent the outlet, for restraining the textile material passing out of the treating vessel. The outlet restraining means is adapted to operate at a greater speed than the inlet restraining means to accomplish a 2–5% elongation of the textile material. A plurality of interior restraining means are positioned within the treating vessel for maintaing the textile material in a completely restrained and elongated condition during treatment in the treating vessel.

3,621,680
METHOD FOR TREATING KNITTED OR WOVEN BROAD MATERIAL WITH LIQUID AND AN APPARATUS THEREFOR

Masao Masuda, 80, 2-chome, Shimoyama-ku, Nagoya, Japan

Filed May 23, 1969, Ser. No. 827,335
Claims priority, application Japan, May 29, 1968, 43/36,059
Int. Cl. B05c *3/02*
U.S. Cl. 68—177 **3 Claims**

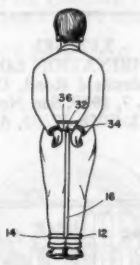


Satisfactory treatment, with a circulating liquid, of broad fabrics, such as jersey, taffeta and carpet, is effected by circulating unidirectionally such a fabric through a U-shaped passageway formed by an outer vessel of a concave cross sectional configuration and by an inner assembly of a convex cross sectional configuration, of a treating apparatus, while only longitudinally folding the fabric as it enters in said passageway.

3,621,681
LEG IRON ARTICLE

Steve F. Mikesic, 1196 Herberich Ave., Akron, Ohio 44301

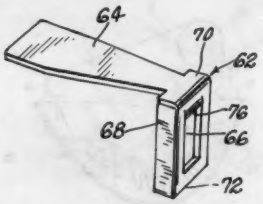
Filed Mar. 5, 1970, Ser. No. 16,760
Int. Cl. E05b *75/00*
U.S. Cl. 70—16 **6 Claims**



A leg iron article for use by a law enforcement officer in restraining a prisoner. The leg iron article consists of a pair of generally C-shaped clips which are secured at one end to a bar and which are adapted to be snapped around the legs of a prisoner. A handle is hinged to the rear end of the bar for controlling the position movement of the clips and it has a ring at its upper end through

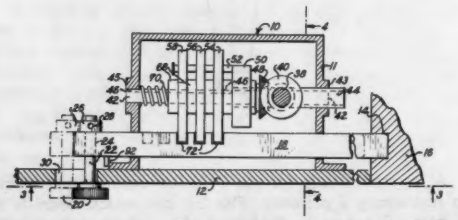
which may be passed a connecting link of a pair of handcuffs. A second embodiment is also shown which may be used to restrain two prisoners simultaneously. This embodiment has a central bar having a handle and leg encircling clips attached to opposite sides of the point of attachment of the first clip to the central bar. The legs of the first prisoner are retained by the clips on one side of the central bar while those of the second prisoner are retained by the clips on the opposite side of the bar.

3,621,682
LOCK MECHANISMS FOR SWITCHES OR THE LIKE
Fred N. Schmidt, Mukwonago, Wis., assignor to Indak Manufacturing Corp., Northbrook, Ill.
Filed Nov. 17, 1969, Ser. No. 877,285
Int. Cl. E05b *15/14, 29/02*
U.S. Cl. 70—364 R **9 Claims**



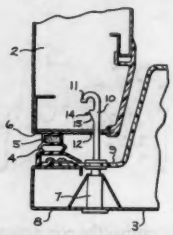
Each of the illustrated lock mechanisms comprises a lock barrel or casing having an opening therein for receiving a lock cylinder which is formed with a longitudinal key slot. A combined spring and locking member is mounted in the lock cylinder. In one embodiment, the spring and the lock member are made in one piece from sheet metal. The spring is in the form of a slender spring arm. The locking member is formed with an aperture for receiving the key. The locking member has a key engaging portion at one end of the aperture. A second portion is formed at the other end of the aperture and is adapted to be moved by the spring into a lock recess in the barrel. When a key is inserted, the second portion is moved out of the lock recess so that the cylinder can be turned. In a second embodiment, the spring and the locking member are formed in one piece from wire. The spring is preferably U-shaped. The key engaging portion of the locking member is preferably in the form of a finger bent laterally therefrom. The second portion of the locking member preferably comprises a U-shaped bend formed therein.

3,621,683
COMBINATION LOCK
Max Mann, 80 Haddenfield Road, Clifton, N.J. 07013
Filed Nov. 7, 1969, Ser. No. 874,913
Int. Cl. E05b *37/02, 65/52*
U.S. Cl. 70—70 **18 Claims**



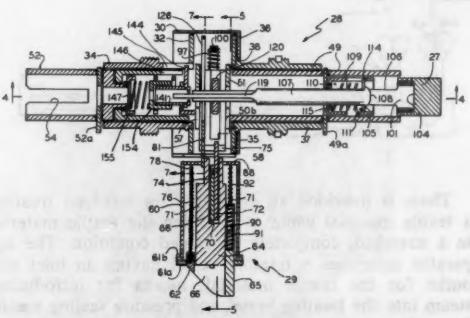
A combination lock in which the locking means comprising several slotted and grooved discs cooperate with a latching means mounted for sliding movement in the grooves in unlatched position, and being gripped by the discs rotatable through notches in the latching means in locked position, the entire assembly being slidable axially upon a shaft to disconnect it from driving engagement with an operating dial, the discs responsive to movement of an operating dial through a control pin are alignable to free the latching bar by movement of the pin, aligning each in forward and reverse movement of the dial, the slidable locking means being disengageable from the operating dial for movement to different combinations.

3,621,684
CHILD SAFE FREEZER
Julius B. Horvay and Bernard J. Grimm, Louisville, Ky., assignors to General Electric Company
Filed Feb. 9, 1970, Ser. No. 9,860
Int. Cl. E05b *65/06;* **E05c** *17/12*
U.S. Cl. 70—93 **3 Claims**



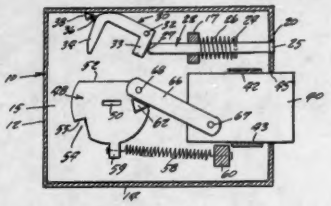
A freezer cabinet including magnetic latching means for normally maintaining the freezer door in a closed position and locking means adapted to permit partial opening of the locked door to provide ventilation of the cabinet interior while preventing access to the contents of the cabinet. Means may also be provided for holding the locked door in the partially open position. An alarm device can also be employed to indicate that the locked door is partially open.

3,621,685
CYLINDRICAL LOCK
Thomas J. Sargent, 106 Alder St., Liverpool, N.Y. 13088
Filed Oct. 1, 1969, Ser. No. 862,772
Int. Cl. E05b *59/04;* **E05c** *9/12*
U.S. Cl. 70—107 **12 Claims**



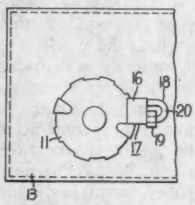
A cylindrical lock having a deadbolt and a guarded latchbolt, the deadbolt being actuated by turn button means on the inside and key means on the outside. The deadbolt projects a substantial distance beyond the latchbolt when both are in fully projected position providing an added safety feature. Also provided are a pick-proof cylinder unit and a spinning knob arrangement for frustrating entry by forcing the outside knob.

3,621,686
AUTOMATIC BOLT LOCK
John N. Klein, New Britain, Conn.
(58 Wildwood Road, Wethersfield, Conn. 06109)
Filed May 1, 1970, Ser. No. 33,558
Int. Cl. E05b *15/04, 63/20*
U.S. Cl. 70—157 11 Claims



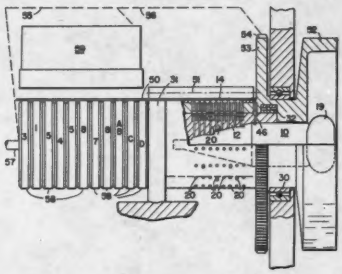
A lock housing on a door having a sliding spring pressed striker bar projectable through an opening in the outer edge of the housing and movable inwardly by the door post when the door is closed. Rearwardly of the striking bar within the lock housing is a pivoted sear having spaced depending forward and rearward arms. The forward arm is adjacent the inner end of the striking bar and is engaged thereby when the latter is depressed. The rearward arm engages a rotatable cam and functions to prevent rotation thereof. The cam is fitted to a key slit and can be rotated by turning of the key inserted into the key slot. A spring member within the lock housing acts on the cam to rotate the same counterclockwise. A slidable lock bolt within the lock housing is projectable through the same edge of the lock housing and a link is pivotally connected at its ends to the cam and the lock bolt. Inward depression of the striker bar when the door is closed will activate the sear such that its rearward arm will disengage from the cam allowing the spring member to rotate the same counterclockwise wherein such movement will through the connecting link cause the lock bolt to move outwardly of the lock housing into locking engagement with the door frame. A spring engages the sear to hold its rearward arm in locking connection to the cam when the lock is open and a stop means on the cam functions to limit rotation of the cam when the lock bolt is wholly projected outwardly in its locked position.

3,621,687
PADLOCK INSTALLATION
Gerald L. Granda, Springfield, Ill., assignor to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed May 6, 1970, Ser. No. 34,977
Int. Cl. B65d *55/14;* E05b *65/02*
U.S. Cl. 70—164 4 Claims



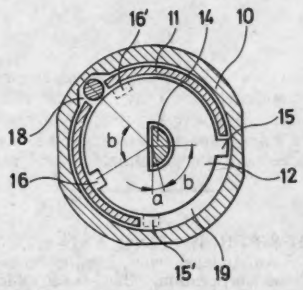
The body of the padlock is used as a blocking member to prevent the opening of a closure, thus denying unauthorized access to an enclosure. The padlock can be secured to a support adjacent the closure in one locked position in which the body of the padlock prevents the closure from being opened and can be secured to the support in a second locked position in which the closure can be opened. The second position is a storage position for the padlock pending subsequent locking use.

3,621,688
MECHANICAL CODE SETTING DEVICE
Romeal F. Asmar, 1837 Andrea Lane, Concord, Calif. 94520, and Henry Janoski, Concord, Calif.; said Janoski assignor to said Asmar
Filed July 13, 1970, Ser. No. 54,517
Int. Cl. E05b *19/02, 27/06, 39/04*
U.S. Cl. 70—352 10 Claims



A mechanical code setting device is disclosed comprising a core provided with a recess having a cross section which decreases from the surface of the core to the bottom of the recess, pin tumblers extending through passageways in the wall of the core and projecting into the recess, a key having a patterned outer surface of the same general configuration as the recess which contacts the inner ends of the pin tumblers when inserted in the recess to cause the outer ends of the pin tumblers to terminate at points with respect to the outer surface of the core in accordance with the pattern on the outer surface of the key and means for sensing such termination points. A preferred embodiment of the device is described and various applications and modifications are disclosed.

3,621,689
CYLINDER LOCK OPERABLE WITH TWO KEYS
Reino Koskinen and Kaarlo Henrik Solitanner, Helsinki, Finland, assignors to Oy Wartsila AB, Helsinki, Finland
Filed May 26, 1969, Ser. No. 827,831
Claims priority, application Finland, May 25, 1968, 1,467/68
Int. Cl. E05b *25/00, 29/02*
U.S. Cl. 70—366 8 Claims



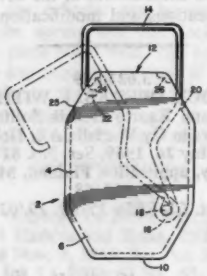
A cylinder lock is disclosed with turnable locking disks and operable with two different keys. One key can be

used to operate the lock clockwise only and the other key to operate the lock counterclockwise only. The function of the lock is based on the principle that the locking disks can move within a limited angle with respect to the cylinder of the lock, that is between two end positions, and that the one key starts its operation movement with the locking disks in one end position and the other key with the locking disks in the opposite end position.

3,621,690
KEY RETAINER
George E. Whitcomb, 5464 Hill and Dale Drive, Cincinnati, Ohio 45213
Filed Apr. 15, 1970, Ser. No. 28,750
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 R **7 Claims**

A two piece key retainer or the like held together by magnetic attraction and mechanical friction.

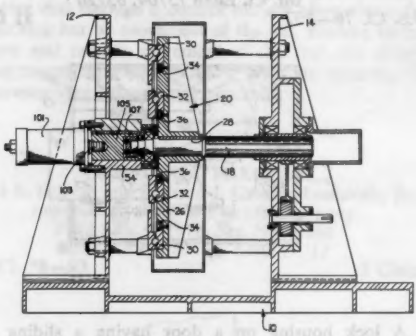
3,621,691
KEYHOLDER
Norbert Leopoldi, 4180 Marine Drive, Chicago, Ill. 60613
Filed Apr. 20, 1970, Ser. No. 29,794
Int. Cl. A44b *15/00*
U.S. Cl. 70—459 **10 Claims**



An easily fabricated, low cost keyholder especially useful as a promotional, give-away item comprising a plastic body housing, a loop wire key retainer pivotally mounted therein and being capable of being positioned into the open or locked position by simple pivotal movement.

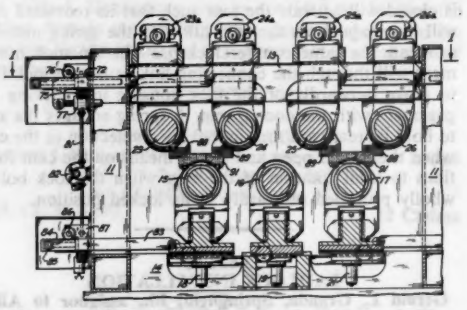
3,621,692
APPARATUS FOR SHAPING AND SIZING BALLS
Wayne B. Weed, Independence, Mo., assignor to Armco Steel Corporation, Middletown, Ohio
Filed June 12, 1969, Ser. No. 832,591
Int. Cl. B21h *1/14*
U.S. Cl. 72—93 **21 Claims**

A machine having a rotating die and a segmented stationary die defining therebetween a circular die passage so that when a ball is delivered to the die passage, movement of the rotating die will cause the ball to spiral



through the circular die passage and discharge from the machine.

3,621,693
STRAIGHTENING MACHINE FOR STRUCTURAL WORKPIECES
Paul Frederick Adams, Carnegie, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.
Filed Aug. 8, 1969, Ser. No. 848,548
Int. Cl. B21d *1/02*
U.S. Cl. 72—164 **5 Claims**

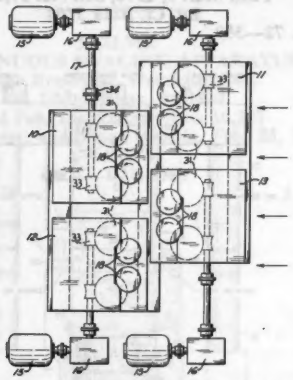


The disclosure relates to a straightening machine wherein there is provided a number of independent roller assemblies so arranged that they form sets of three rollers between which the product to be straightened is fed. Each roller assembly is provided with a frame and with reference to the upper assemblies, there is provided a gear driving arrangement for the rollers thereof. Each gear driving arrangement is constructed as a unitary assembly adapted to be quickly removed from and inserted into the frames as a unit. Positioning means are provided for the individual roller assemblies, which means allow the assemblies to be moved parallel to the pass line without disturbing their predetermined spaced relationship. Also disclosed is a locking means for maintaining the roller assemblies in their predetermined spaced relationship after it has been established. There is disclosed, in addition, a pressure take-up mechanism associated with each frame of the upper roller assemblies for eliminating any clearance between the frames and the housing.

3,621,694
ROLLING MILL

Joseph Irwin Greenberger, Pittsburgh, Pa., assignor to United Engineering and Foundry Company, Pittsburgh, Pa.

Filed Apr. 20, 1970, Ser. No. 29,976
Claims priority, application Great Britain, May 5, 1969, 22,853/69
Int. Cl. B21b *31/32*
U.S. Cl. 72—226 12 Claims

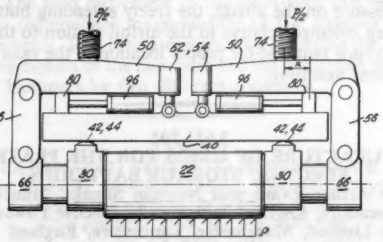


This invention relates to a rolling mill and, for the purpose of description, to a vertical mill of the type employed as an integral part of a continuous casting plant.

3,621,695
ROLLING MILL CROWN PREVENTION AND CONTROL MEANS

Werner W. Eibe, McCandless Township, Allegheny County, and Paul E. Huzyak, Pittsburgh, Pa., assignors to Blaw-Knox Company, Pittsburgh, Pa.

Filed Oct. 24, 1968, Ser. No. 770,358
Int. Cl. B21b *31/00*
U.S. Cl. 72—237 14 Claims



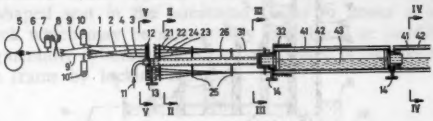
A rolling mill having means utilizing the rolling load to control the crown of the rolls. A beam in conjunction with associated structure is arranged to receive the rolling load and direct it to the outboard bearings of the backup rolls so as to control the crown of the rolls, the arrangement being such that no crown controlling load is applied to the mill housing.

3,621,696
DEVICE FOR TRANSFERRING ROLLED MATERIAL FROM A ROLLING MILL TO A COOLING BED

Sven Erik Malte Norlindh, Morgardshammar, Sweden, assignor to Morgardshammar Aktiebolag, Morgardshammar, Sweden

Filed Aug. 21, 1969, Ser. No. 851,908
Claims priority, application Sweden, Aug. 27, 1968, 11,490/68
Int. Cl. B21b *39/00, 43/00, 43/08*
U.S. Cl. 72—201 3 Claims

This invention relates to a device for the transferring of rolled hot material from a shearing device after a finishing roll stand to a cooling bed. Two or several tubular guides are arranged after the shearing device in order to receive the cut bar sections, which via a change over device are directed to longitudinal guides and then directed to a device where the bar sections are retarded and then fall down onto the cooling bed. The present invention resides in that the longitudinal guides comprise rotatably arranged sets of longitudinal tubular guides, each

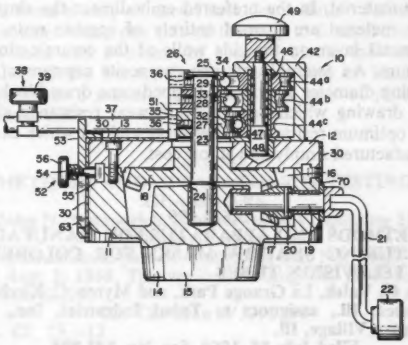


set containing guides placed at different distances (R1, R2, R3 and R4) from the axis of rotation and that these guides within each set converge to one and the same distance (R5) from the axis of rotation and that the bars from there are further guided to subsequent drum sections between outer guides arranged on these sections in a longitudinal direction where the cut bar sections are retarded and then fall down onto a cooling bed.

3,621,697
TUBE BENDING TOOL

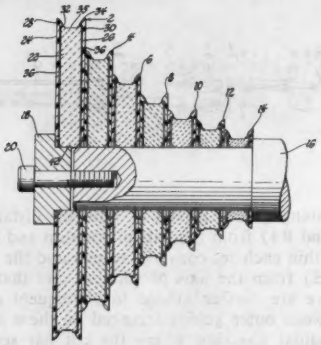
Robert S. Martinko, Chagrin Falls, Ohio, assignor to Crawford Fitting Company, Solon, Ohio

Filed June 16, 1969, Ser. No. 833,415
Int. Cl. B21d *7/02*
U.S. Cl. 72—219 7 Claims



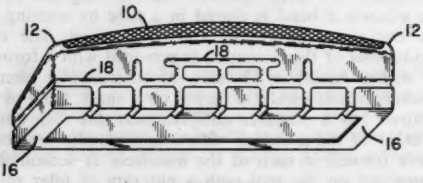
Disclosed is a hand operated tube bending tool of the type wherein a bend is placed in a tube by rotating the tube end about a forming roll or mandrel. The tube bending tool of this invention is provided with a forming roll means having a plurality of substantially circular mandrels concentrically arranged on a shaft. Each of the mandrels has a diameter different from the diameter of the other of the mandrels with a substantially peripheral groove formed in each of the mandrels. A second shaft is provided on the tool with a plurality of idler rollers thereon, each roller disposed substantially adjacent one of the mandrels. A cover is adjustably carried on the tool in such a manner as to be adjusted vertically whereby the upper surface of the cover may be aligned with a particular mandrel and idler roller such that the tube bending tool may be used to place bends in tubing of various diameters without the necessity of replacing the mandrel and the idler rollers.

3,621,698
COMPOSITE CAPSTAN ASSEMBLY
Anthony J. La Rocco, Arvada, Robert M. Smith, Evergreen, and Frank C. Miner, Englewood, Colo., assignors to Coors Porcelain Company, Golden, Colo.
Filed Apr. 30, 1970, Ser. No. 33,236
Int. Cl. B21c *1/02*
U.S. Cl. 72—289 9 Claims



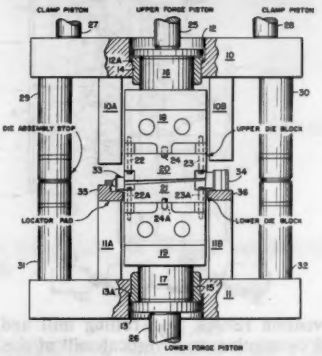
A capstan comprising a ceramic ring having bonded to each of the side walls thereof a ring of another material having a greater crack resistance than that of the ceramic ring and having a greater outside diameter than that of the ceramic ring such that the rings of other material provide radially outwardly extending annular flanges on each side of the ceramic ring, at least the inner surface of each of the rings of other material being an organic resin and the side walls of the ceramic ring preferably having a thin layer of metal thereon to increase the bond strengthen between the ceramic ring and the rings of other material. In the preferred embodiment the rings of other material are formed entirely of organic resin and the metal layer on the side walls of the ceramic ring is titanium. An assembly of such composite capstans of decreasing diameter provides a stepped-cone draw block for wire drawing which has optimum wear resistance along with optimum resistance to breakage and yet which can be manufactured simply and at low cost.

3,621,699
METHODS AND APPARATUS FOR MANUFACTURING SHADOW MASKS FOR COLORED TELEVISION TUBES
John G. Valek, La Grange Park, and Myron C. Kirchner, Itasca, Ill., assignors to Tubal Industries, Inc., Elk Grove Village, Ill.
Filed July 15, 1969, Ser. No. 841,805
Int. Cl. B21d *11/04, 22/00, 51/00*
U.S. Cl. 72—306 11 Claims



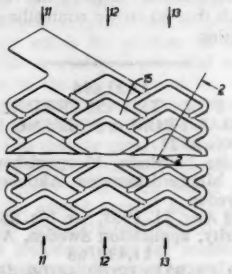
A manufacturing method and apparatus for forming the edges of a shadow mask into a self-supporting structure in which all portions of the shadow mask are firmly supported while they are being shaped so as to avoid destruction or distortion of the perforated section of the mask. Nine internal supporting blocks and dies are positioned by a rotary cam and an air cylinder to support the inside concave surface of the shadow mask while eight dies are brought in from the exterior of the mask to form the edges into a self-supporting flanged and ribbed structure.

3,621,700
STRAIGHTENING OF GUIDE VANES
Richard L. Wachtell, Tuxedo Park, N.Y. 10987, and Edward C. Palmenberg, 72 Briar Road, Nanuet, N.Y. 10954
Filed Mar. 9, 1970, Ser. No. 17,689
Int. Cl. B21k *3/04*
U.S. Cl. 72—309 8 Claims



A method and apparatus are disclosed for restoring distorted guide vanes to their original shape for proper location and performance in a final vane assembly. A heated airfoil section having locating buttresses at opposite ends thereof is clamped under pressure between a pair of heated dies having contoured working surfaces defining the desired airfoil shape, with the buttresses of the vane extending freely outside the dies. The pressure is maintaind on the airfoil until it has conformed to the configuration defined by the dies and, while maintaining the pressure on the airfoil, the freely extending buttresses are then oriented relative to the airfoil section to the correct attitude required for proper location of the vane in the final vane assembly.

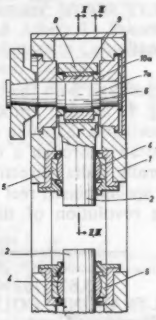
3,621,701
MANUFACTURE OF GRIDS FOR THE PLATES OF ELECTRIC STORAGE BATTERIES
James Arthur Evans and Norman Shanks, Manchester, Lancashire, England, assignors to Electric Power Storage Limited, Manchester, Lancashire, England
Filed Aug. 19, 1969, Ser. No. 851,345
Claims priority, application Great Britain, Aug. 27, 1968, 40,945/68
Int. Cl. H01m *35/10, 35/22*
U.S. Cl. 72—364 7 Claims



In rolling a grid for an electric storage battery plate from a sheet of lead, dispersion strengthened lead, or lead alloy, the rollers are grooved so as to produce a grid

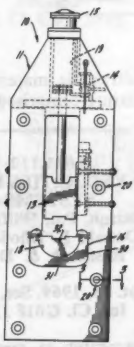
of lattice-like pattern of interconnected bars or ribs comprising predominantly junctions from which only three bars radiate, the direction of rolling being such that at each such junction only one bar extends towards the junction but two bars diverge from it in the direction of rolling. The preferred pattern comprises rows of obtuse angled V portions each having the outer ends of its limbs joined to intermediate points in the limbs of adjacent V portions in an adjacent row.

3,621,702
CONTINUOUS SWAGING APPARATUS
Bruno Kralowetz, Weinleiten 142, St. Ulrich, Steyr, Austria
Filed Feb. 10, 1970, Ser. No. 10,237
Claims priority, application Austria, Feb. 25, 1969, A 1,866/69
Int. Cl. B21j *7/14*
U.S. Cl. 72—429 **3 Claims**



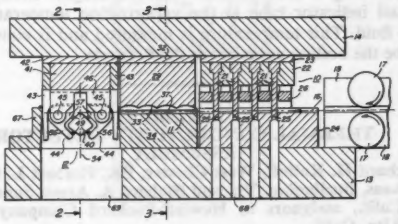
A continuous swaging apparatus provided with at least two hammers, each generally located radial with respect to the workpiece, and actuated in a reciprocating, oscillating motion to swage, and also feed the continuous workpiece. The feed movement of the workpiece can be of a specific requirement independently of the hammer blow requirements. This is accomplished by actuating the reciprocating motion of the hammers and the oscillation motion of the hammers by two different eccentrics.

3,621,703
LAMINATED STEAM HAMMER FRAME
Arthur H. Swift, Worcester, Mass., assignor to Wyman-Gordon Company, Worcester, Mass.
Filed June 12, 1969, Ser. No. 832,799
Int. Cl. B21j *7/02*
U.S. Cl. 72—455 **7 Claims**



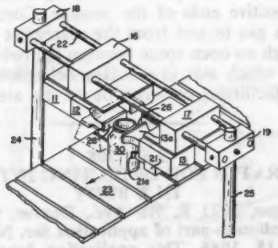
There is disclosed a hammer wherein the frame of the hammer comprises a series of substantially identical plates laminated together so that the frame is unitary in vertical extension and wherein the plates are joined together and connected by tie bolts. The tie bolt comprises a bolt, necked down between its ends wherein a split resilient sleeve encircles the bolt and encircling the split rubber sleeve in turn is a second split sleeve. Nuts are engaged on the end portion of the bolt and when turned tightly onto the end of the bolt the resilient sleeve is compressed, causing the steel sleeve to expand, thus tying the entire laminated frame together. The frame further comprises a shaped seat in the laminated frame to house a sow block which may be segmentally cylindrical or modified segmentally cylindrical in shape and which is anchored to the frame by locking members.

3,621,704
BENDING APPARATUS
Charles W. Schaeffer, Lebanon, Pa., assignor to Bethlehem Steel Corporation
Filed June 17, 1969, Ser. No. 834,003
Int. Cl. B21d *9/05, 28/00*
U.S. Cl. 72—339 **5 Claims**



Apparatus for making a product, such as an expansion shell, from a strip of metal includes a station for shearing notches along one side of the strip to form the leaves of a shell and a station to shear a blank, including a number of the leaves, from the strip and to bend the blank about a mandrel by means of a pair of pivotally mounted dies.

3,621,705
METHODS AND APPARATUS FOR TESTING GLASSWARE
John N. Antonevich, Jamestown, N.Y., assignor to Blackstone Corporation
Continuation-in-part of application Ser. No. 749,533, Aug. 1, 1968. This application Aug. 10, 1970, Ser. No. 62,259
Int. Cl. G01n *3/32, 3/38*
U.S. Cl. 73—12 **3 Claims**



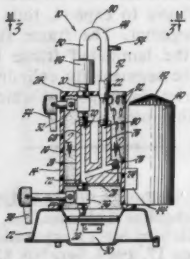
A method of detecting articles containing defects such as hair line cracks, fire checks comprises impacting the glassware against a source of vibration. An apparatus is provided having an ultrasonic transducer and means adapted to impact an article to be tested against a source of vibration.

3,621,706

FLUID VAPORIZATION TESTER AND METHOD

Francis J. Markey, Lewisburg, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 2, 1969, Ser. No. 838,514
Int. Cl. G01n 25/02
U.S. Cl. 73—17 A 6 Claims



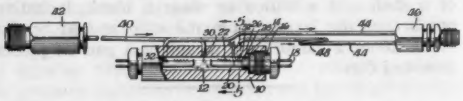
A visual fluid vaporization indicator in which a sample of the fluid is placed in a boiler and heated to cause a percolating action. A fluid column surges through the visual indicator tube at the vaporization temperature of the fluid. This temperature is measured and is considered to be the boiling point of the fluid sample.

3,621,707

THERMAL CONDUCTIVITY DETECTOR ASSEMBLY

Richard H. Kolloff, West Chester, Pa., Herbert L. Greenhaus, Burlington, Vt., and Richard A. Arms, Sunnyvale, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed July 8, 1969, Ser. No. 839,834
Int. Cl. G01n 27/18
U.S. Cl. 73—27 1 Claim



A pair of separate thermal conductivity detector cells, each containing two detecting elements, are clamped between two mating housing halves which provide a large heat sink. Each of the detector cells include a single passage in a housing symmetrically disposed about the axis of the passage to facilitate matching like cells for use in the detector assembly. The detecting elements are coaxially disposed at both ends of each cell. Gas is introduced at the central portion of each passage and permitted to split and flow over the respective detecting elements and exit at the respective ends of the passage. Conduits for conducting the gas to and from the respective detector cells pass through an open space between the two mating housing halves which aids in reducing deleterious thermal effects and facilitates construction of the assembly.

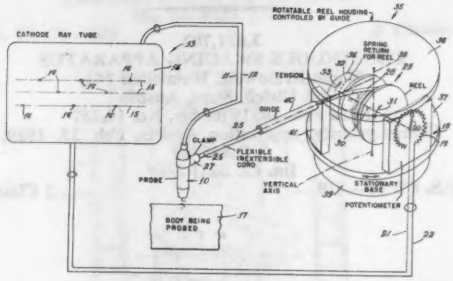
3,621,708

APPPARATUS FOR DETECTING INTERFACES IN A BODY

Stelios Regas, 3021 E. 7th Ave., Denver, Colo. 80206

Continuation-in-part of application Ser. No. 752,874, Aug. 15, 1968. This application June 19, 1970, Ser. No. 47,819
Int. Cl. G01n 24/00
U.S. Cl. 73—67.8 S 4 Claims

The position of the sweep on the screen of a cathode ray tube along which traces appear corresponding to interfaces in a body detected by an ultrasonic probe is controlled by variable impedance means operated by a reel on which an inextensible cord connected to the probe is wound. The cord is unwound against the biasing action of a spring and extends through a guide tube. The variable impedance means, reel and guide tube are mounted to pivot about an axis perpendicular to the axis of pivotal movement of the reel. In one embodiment the reel is rotatable about a horizontal axis in a housing that is rotatable about a vertical axis with the cord extending radially from the housing. In another embodiment the reel is rotatable about a horizontal axis in a stationary housing and the cord is withdrawn through a bushing in a top plate and in any generally radial direction. Provision is made for releasing the spring biased reel in steps corresponding to one complete revolution of the variable impedance means.

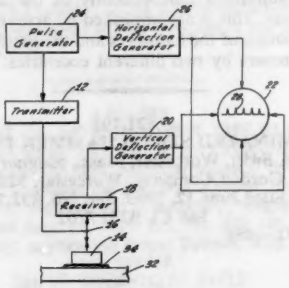


3,621,709

ULTRASONIC COUPLANT

Albert E. Frey, Danbury, Conn., assignor to Automation Industries, Inc., Los Angeles, Calif.

Filed Jan. 28, 1969, Ser. No. 794,715
Int. Cl. G01n 29/04
U.S. Cl. 73—71.5 8 Claims



A couplant of ultrasonic material testers is described which includes a mixture comprised of borax and glycerin.

3,621,710

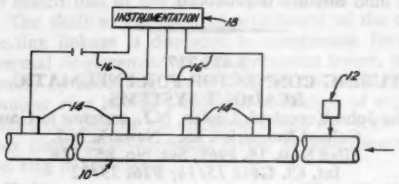
MEASURING VELOCITIES IN MULTIPHASE SYSTEMS

John J. Day, Pittsburgh, Pa., Wilfred R. McLeod, Houston, Tex., and Donald F. Rhodes, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Sept. 26, 1969, Ser. No. 861,383
Int. Cl. G01f 1/00
U.S. Cl. 73—194 16 Claims

Methods and apparatus to measure the velocities of all or selected ones of the components of a multicomponent material transmission system. Radioactive tracers,

each compatible with only one component in the system, are utilized. Various electronic embodiments to handle

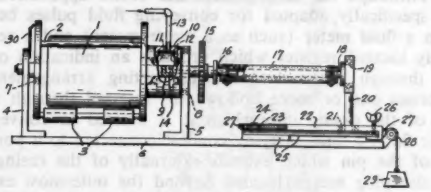


the data, means to clamp the detectors to a pipeline, and means to inject radioactive gaseous and liquid tracers are disclosed.

3,621,711
APPARATUS FOR TESTING REINFORCED ELASTOMERIC STRUCTURES

Ronald L. Griffith and Albert L. Promislow, Kingston, Ontario, Canada, assignors to Canadian Industries Limited, Montreal, Quebec, Canada

Filed Feb. 16, 1970, Ser. No. 11,397
Claims priority, application Canada, Feb. 17, 1969, 43,189
Int. Cl. G01n *3/32*
U.S. Cl. 73—100 **6 Claims**

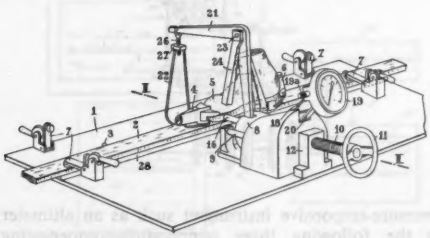


An important apparatus for the testing of textile reinforced flexible structures by means of strain cycling. The apparatus permits the measurement of work input during strain cycling by taking account of the generation of energy in the form of heat. The dynamic modules of the textile reinforcement in the interior of the test sample may also be measured.

3,621,712
DEVICE FOR TESTING SAFETY SKI BINDINGS

Jean JosephAlfred Beyl, Boulevard Victor Hugo, Nevers, Nievre, France

Filed July 22, 1969, Ser. No. 843,323
Claims priority, application France, Aug. 6, 1968, 162,053
Int. Cl. G01l *5/03*
U.S. Cl. 73—133 **4 Claims**

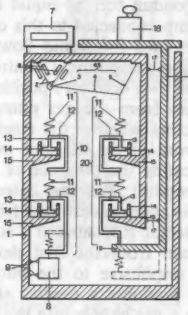


Device for testing the operation of heel and toe safety ski bindings by causing either one of the bindings to operate under a pressure or tractive effort exerted on the ski boot retained by the binding. This is achieved by means of an actuating member adapted to act upon the boot and connected to means whereby the magnitude of the effort exerted on the boot can be measured.

3,621,713
INSTRUMENT FOR MEASURING MASSES AND FORCES

Armin Wirth, Mario Gallo, and Johannes Wirth, Zurich, Switzerland, assignors to Wirth, Gallo & Co., Zurich, Switzerland

Filed Jan. 19, 1970, Ser. No. 3,821
Claims priority, application Switzerland, Feb. 28, 1969, 3,146/69
Int. Cl. G01l *5/22*
U.S. Cl. 73—141 A **10 Claims**

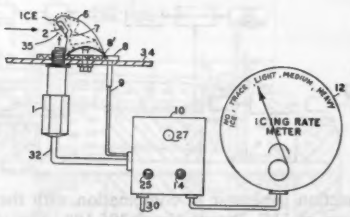


The invention relates to load-measuring instruments which employ electrical means as the load-measuring means. In the instrument of this invention, the load-measuring means comprises a pair of tensioned strings which are electrically excited to vibrate. A load is applied to said strings so as to vary the tension with a consequent variation in their vibration frequency, which information in turn is transmitted to a digital device which translates it into a load-indicating quantity.

3,621,714
ICE DETECTOR MEANS

Alfred R. Puccinelli, 36 Bay Drive E., Huntington, N.Y. 11743

Filed May 13, 1969, Ser. No. 824,217
Int. Cl. B64d *15/20;* **G01w** *1/00*
U.S. Cl. 73—170 **1 Claim**

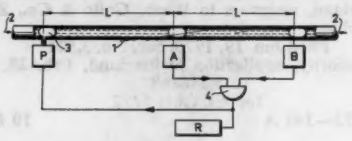


An ice detector probe is mounted on the test surface. The probe contains a radiation source and a radiation detector. Ice forming on the probe will cut off the radiation to the detector. Icing rate is detected by automatically heating and de-icing the detector when the ice forms. The required repetitive heating cycle is counted over a period of time to provide an indication of icing rate.

3,621,715
SYSTEM FOR MEASURING THE FLOW VOLUME OF A LIQUID FLOW

Anton Lars Olof Söderkvist, Vallingby, and Kjell Esbjörn Jidling, Spanga, Sweden, assignors to LKB-Produkter AB, Mariehall, Sweden

Filed Aug. 6, 1969, Ser. No. 848,035
Int. Cl. G01f *3/00*
U.S. Cl. 73—194 E 9 Claims

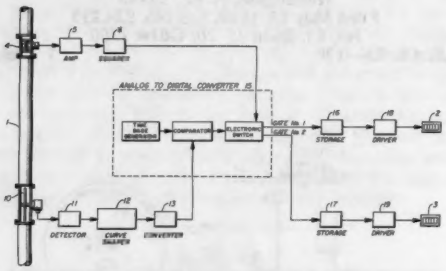


A system for measuring the flow volume of a liquid flow comprises a conduit for the liquid flow to be measured and a gas pump connected to this conduit for introduring gas bubbles into the liquid flow in the conduit. The operation of the gas pump is controlled via a logic control circuit from two detectors positioned close to the conduit downstream from the gas pump. Each detector is capable of detecting whether the conduit is filled with gas or liquid in front of the detector and generating an output signal indicating the presence of gas or liquid respectively in the conduit. The first detector is located at a predetermined distance downstream from the gas pump and the second detector is located at a substantially equal distance downstream from the first detector. The logic control circuit is responsive to the output signals from the detectors and produces a control signal for the gas pump to introduce a gas bubble into the liquid flow in the conduit when gas bubbles previously introduced into the liquid flow are detected simultaneously by both detectors. The system includes also a counter for counting the number of gas bubbles introduced into the flow.

3,621,716
METHOD AND MEANS FOR COMPENSATING A NONLINEAR RESPONSE IN AN ELECTRICAL CIRCUIT

John B. Rosso, Tulsa, Okla., assignor to Combustion Engineering, Inc., New York, N.Y.

Filed Oct. 14, 1969, Ser. No. 866,231
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 R 5 Claims

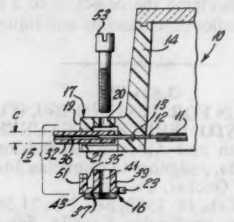


A function generator in combination with the Net Oil Computer of U.S. Patent No. 3,385,108. The change in amplitude of the voltage produced from a capacitance device is nonlinear with a change in the ratio of constituents of a fluid mixture. The voltage is amplified by a curve-shaper circuit comprised of a voltage-dividing arrangement of resistors through which the voltage is applied to bias the bases of a plurality of transistors. Slope potentiometers acting through an operational amplifier for increments of the input curve control the ratio between the voltage input due to the capacitance device and the voltage output of the amplifier. A composite voltage output substantially linear with respect to the ratio of constituents of the fluid mixture is produced.

3,621,717
TUBING CONNECTOR FOR PNEUMATIC READOUT SYSTEMS

William John Korenicki, Linden, N.J., assignor to Gamon-Calmet Industries, Inc., Newark, N.J.

Filed Sept. 15, 1969, Ser. No. 857,818
Int. Cl. G01f *15/18*; F16l *33/22*
U.S. Cl. 73—272 19 Claims

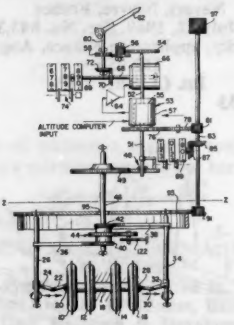


There is provided a novel type of connecting arrangement for simply and effectively establishing fluid communication between various portions of a fluidic system. Although the arrangement has broad application, it is specifically adapted for conveying fluid pulses between a fluid meter (such as a water meter) and a remotely located register which provides an indication of flow through the meter. The connecting arrangement comprises one or more hollow pins inserted through a wall of the casing into which it is desired to convey fluidic flow; a fluid carrying conduit connected to a portion of the pin which extends externally of the casing; and clamping means located beyond the outermost extremity of the pin for maintaining the connection of the conduit and the pin and at the same time for preventing mechanical stress from being applied to the pin.

3,621,718
TEMPERATURE-COMPENSATED PRESSURE-RESPONSIVE INSTRUMENT

Graham A. Ireland, Ottawa, Ontario, Canada, assignor to Leigh Instruments, Carleton Place, Ontario, Canada

Filed July 7, 1969, Ser. No. 839,724
Int. Cl. G01l *19/04*
U.S. Cl. 73—393 15 Claims



A pressure-responsive instrument such as an altimeter having the following three temperature-compensating features:

(1) The aneroid capsule hub assembly has a cup-shaped hub element whose contraction matches the expansion of the fittings of the capsule hub assembly.

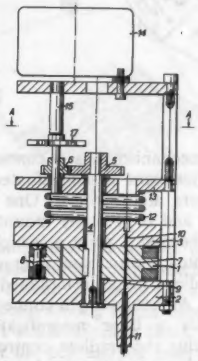
(2) The connecting linkage between the hub element and the shaft driven thereby is made of materials having a temperature coefficient of expansion selected to match that of the capsules as mounted.

(3) The shaft at the point of attachment of the connecting linkage is displaced to compensate for the thermal displacement of the instrument frame, preferably by mounting one bearing of the shaft on an annular ring having a different coefficient of expansion from that of the frame at about 90° from the two diametrically-opposite points of attachment of the ring to the frame.

3,621,719
ANALYTICAL APPARATUS

Geoffrey Willoughby Goodman, 105 Banstead Road S., Sutton, England, and Lawrence Harvey, Highland Cottage, Cold-Harbour, near Dorking, England

Filed Nov. 4, 1969, Ser. No. 873,940
Claims priority, application Great Britain, Nov. 14, 1968, 53,989/68
Int. Cl. G01n *1/00*
U.S. Cl. 73—422 GC 5 Claims

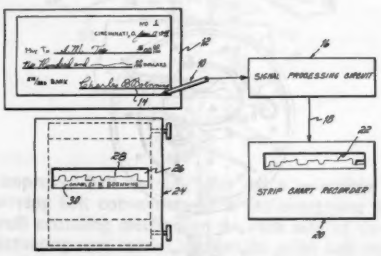


Apparatus suitable for loading liquid samples onto an analytical device such as a chromatographic column. The apparatus has a rotatable barrel containing chambers which are filled with liquid, and a Geneva mechanism to control rotation of the barrel.

3,621,720
IDENTIFICATION SYSTEM

Robert Kenley Clark, Forest Park, Cincinnati, Ohio, assignor to The Mosler Safe Company, Cincinnati, Ohio

Filed Jan. 27, 1969, Ser. No. 793,961
Int. Cl. G01l *5/00*
U.S. Cl. 73—432 1 Claim

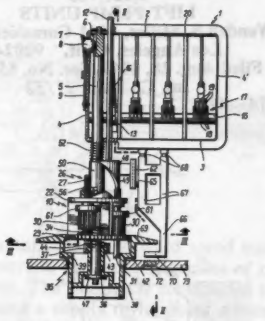


A system for verifying the identity of a person wherein verification is established by a favorable comparison between (a) the time-varying force between a writing instrument and writing surface produced when the person to be identified writes his signature and (b) stored data correlated to the time-varying force previously generated by a person of known identity while writing his signature.

3,621,721
TUNERS AND, MORE PARTICULARLY, TUNERS FOR TELEVISION SETS

Rudolf Mayer, Charlottenwalde, and Lothar Volkheimer, Trossingen, Germany, assignors to Messrs. R. & E. Hopt KG

Filed Oct. 8, 1969, Ser. No. 864,665
Claims priority, application France, Sept. 12, 1969, 6931076
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.6 17 Claims

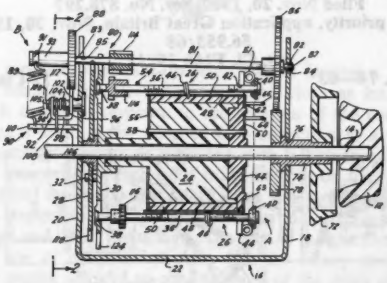


A tuner for a television set includes a drive arrangement comprising a drum rotatably supported about its longitudinal center axis, and provided with a plurality of set screws which are evenly spaced in an angular direction about said axis. The screws extend in parallel relationship with the longitudinal center line of the drum and are engageably coupled with a scanning member which is provided with a V-shaped cam piece located in the path of the set screws. The peak of the V-shaped cam piece contacts the end of the set screw which is operated when a tuning knob connected with the tuner is moved whereby a tuning element which is coupled to the scanning member is controlled.

3,621,722
PRESET MULTICHANNEL TUNING ASSEMBLY

Meigs W. Newberry, East Longmeadow, Mass., assignor to General Instrument Corporation, Newark, N.J.

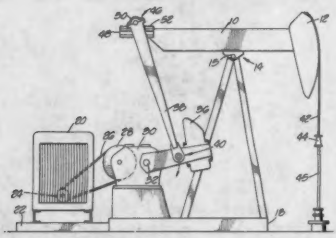
Filed Aug. 3, 1970, Ser. No. 60,334
Int. Cl. F16h *35/18*
U.S. Cl. 74—10.8 30 Claims



A multichannel tuning assembly of the preset type is provided for use with television receivers and like devices, in which the fine tuning adjustment mechanism, once engaged with the operative tuning element, permits

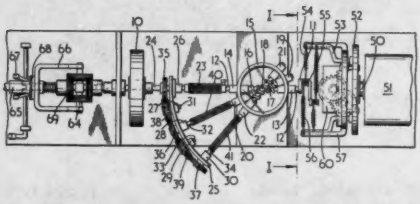
continuous uninterrupted tuning in both clockwise and counterclockwise directions. Tuning elements on a body, or turret-type carrier, are adjusted by rotation of a tuning wheel, the initial rotation of which in either direction causes adjusting means to engage with the tuning elements, and the subsequent rotation of which continuously fine tunes a given station in both directions. The initial rotation actuates control means which lowers the adjusting means into driving engagement with the tuning elements which can then be adjusted without "play" or lost motion. Rotation of the coarse tuner or station selector disengages the adjusting means and resets the control means, as well as rotating the next sequential tuning element to the tuning station.

3,621,723
LIFT PUMP UNITS
Wendell S. Miller, 1341 Comstock Ave., Los Angeles, Calif. 90024
Filed Aug. 28, 1969, Ser. No. 853,771
Int. Cl. F16h *21/32*
U.S. Cl. 74—41 **8 Claims**



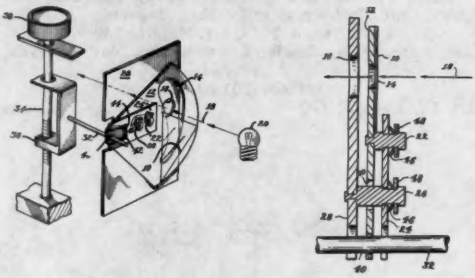
Torque load fluctuations on the prime mover of oil well pumps and the like having a rotary crank for driving a walking beam are minimized through coupling of the pitmans to the walking beam along a movable line of contact between abutting bearing surfaces that are affixed to the pitmans and the beam respectively, and that are held in nonsliding rolling engagement with each other, so that the lever arm distance between the line of contact and the pivot axis of the walking beam varies as the angle between the pitmans and the beam changes with rotation of the crank to provide a greater mechanical advantage during the power stroke of the pump and a lesser mechanical advantage during its return stroke.

3,621,724
VARIABLE DRIVE RATIO POWER TRANSMISSION
Roy Cyril Vaughan, Dublin, Ireland, assignor of fractional part interest to Alan Salisbury Lamburn, Kencott, via Lechlade, Gloucestershire, England
Filed Nov. 20, 1969, Ser. No. 878,297
Claims priority, application Great Britain, Nov. 30, 1968, 56,953/68
Int. Cl. F16h *29/12*
U.S. Cl. 74—63 **12 Claims**



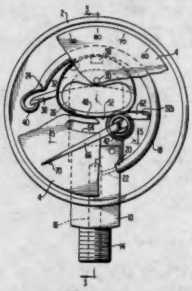
In a power transmission an input shaft drives means provided to convert input torque into a pulsating torque applied to a member. A unidirectional drive element is connected between the member and a stationary part so that torque pulses in one direction of rotation cannot rotate the member in that direction, and an output shaft is connected to be driven by the member, preferably through a smoothing spring.

3,621,725
CONTROL MECHANISM
Henry J. Emmel, Irondequoit, and Thomas J. Morgan, Rochester, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Jan. 2, 1970, Ser. No. 23
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.15 **3 Claims**



A control mechanism has a coarse adjustment mode and a fine adjustment mode actuated from a common grip. Two levers are provided. One of the levers is a follower lever and is pivotally mounted upon the other, a main lever, beyond a point at which the main lever is pivotally mounted upon a base. A gradient control means such as a gradient filter, is mounted at the end of the follower lever. An actuator pin connected to a grip drives both levers for a large magnification of movement, coarsely adjusting the gradient control means to a point slightly beyond a predetermined setting. The pin then disengages from the main lever and drives the follower lever in the opposite direction for a small magnification of movement, finely adjusting the gradient control means.

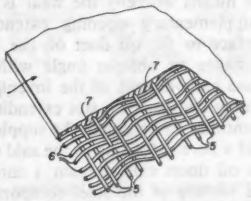
3,621,726
PRESSURE GAUGES
Dean E. Gladow and Donald F. Wilkes, Albuquerque, N. Mex., assignors to Rolamite, Incorporated, San Francisco, Calif.
Filed Apr. 22, 1970, Ser. No. 30,671
Int. Cl. F16h *27/02*
U.S. Cl. 74—89.2 **33 Claims**



A movement for meters and gauges. A roller provides the output motion for a pointer. The roller is supported

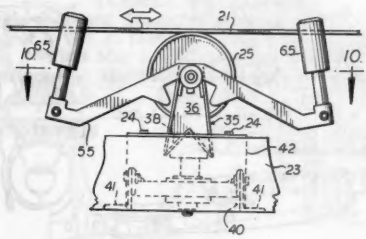
for movement along a guide surface on an actuating member. A band encircles the roller and the actuating member for holding the roller against the guide surface while allowing the roller to roll along the surface. A portion of the band is wrapped on the roller and extends outwardly from the roller to a fixed support. The actuating member rotates about an axis spaced from the guide surface and motion is transmitted from the input member, which may be a Bourdon tube, by an arm extending outwardly from the actuating member. Upon rotation of the actuating member about its axis by the input member, the roller rolls along the guide surface, causing the pointer to follow approximately a circular path.

3,621,727
WEAR-RESISTANT TOOTHED BELT
Mario Cicognani, Milan, Italy, assignor to Industrie Pirelli S.p.A.
Filed Apr. 3, 1970, Ser. No. 25,463
Claims priority, application Italy, Apr. 14, 1969, 15,531/69
Int. Cl. F16g *1/18, 1/26, 1/22*
U.S. Cl. 74—239 **6 Claims**



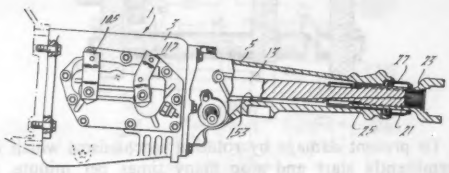
The disclosure comprehends a belted driving system having a wear-resistant toothed belt which comprises a body of chloroprene rubber. The body has a resistant core formed by cords selected among textile fibres, glass fibres and metallic wires. A self-lubricating fabric is utilized for covering the teeth of the belt and the intervening spaces.

3,621,728
SELF-ENERGIZING BELT TRAINING IDLER
Hubert Steorts, Jr., Indianapolis, Ind., assignor to FMC Corporation, San Jose, Calif.
Filed Dec. 10, 1969, Ser. No. 883,708
Int. Cl. F16h *7/18;* **B65g** *15/62*
U.S. Cl. 74—241 **9 Claims**



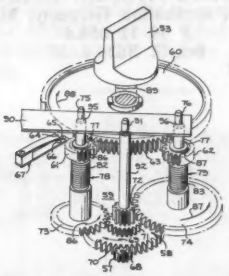
An improved belt training idler for a reversible material carrying belt conveyor with a self-energizing double guide roll actuating mechanism on each side of the belt. Each actuating arm carries an upright guide roll on each of its ends and extends in both directions along the belt from the axis of the idler roll assembly. The actuating arm assembly is pivotally mounted about the idler roll axis to tilt in a vertical plane parallel to the belt and is entirely supported on the idler end bracket so that special idler roll assemblies are not required. This means of mounting is adaptable to a troughed-belt-carrying-run training idler, a flat-belt-carrying-run training idler, or a flat-belt return-run training idler. When the misaligned belt contacts one of the guide rolls, it tilts upward and acts to swivel the entire idler roll assembly to apply a corrective force to the belt.

3,621,729
TRANSMISSION
Bohdan A. Andrushkiw, Dearborn Heights, and Lynn A. Range, Detroit, Mich., assignors to Chrysler Corporation, Highland Park, Mich.
Filed Mar. 13, 1970, Ser. No. 19,375
Int. Cl. F16h *5/08, 3/08;* **G05g** *5/10*
U.S. Cl. 74—335 **2 Claims**



A fully synchronized three forward speed transmission with interlock levers to prevent engagement of more than one gear at a time. The housing is constructed to provide a dam for retaining a supply of lubricant adjacent a rear bearing for the mainshaft.

3,621,730
WASHING MACHINE WITH DUAL SPEED CYCLE CONTROL MEANS
Gresham N. Jennings, Louisville, Ky., assignor to General Electric Company
Filed Dec. 22, 1969, Ser. No. 887,190
Int. Cl. F16h *3/34*
U.S. Cl. 74—354 **3 Claims**



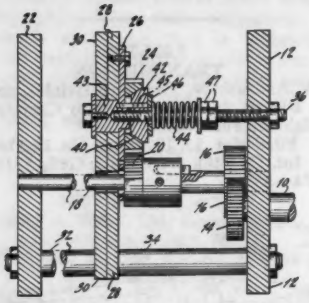
A motor-driven cam-operated switch having a rotary cam adapted to selectively open and close at least one switch means in response to the rotation of the cam and having a drive motor adapted for connection to a source of electrical energy, is provided with a two-speed drive train adapted to selectively transmit low or high speed rotational motion to the rotary cam. The two-speed drive train comprises first and second drive pinions adapted to engage and drive the rotary cam, means to selectively engage one of the drive pinions with the rotary cam, and drive means adapted to connect each of the drive pinions to the drive motor such that the first drive pinion may be operative to drive the rotary cam at high speed and the second drive pinion may be operative to drive the rotary cam at low speed.

3,621,731

SELF-ACTUATING BRAKE FOR INTERMITTENTLY OPERATING MECHANISM

Max Houss, 1123 E. 26th St., Brooklyn, N.Y. 11210

Filed June 12, 1970, Ser. No. 45,857
Int. Cl. F16h *5710;* B60t *13/04*
U.S. Cl. 74—411.5 7 Claims



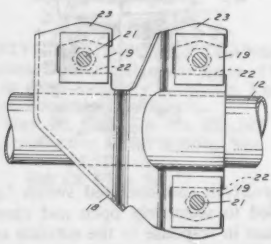
To prevent damage by rotating mechanisms which intermittently start and stop many times per minute, as for example in a Pitney-Bowes stamp meter machine, there is provided braking mechanism which is self-actuating and effective only in the relatively short interval of time before the stoppage of rotation occurs during each cycle of operations. The braking mechanism is in the form of a special gear which frictionally engages a stationary element to cause a drag on the rotating mechanism during the final 25% of travel of the rotating mechanism immediately before the rotating mechanism arrives at the home or rest position in each cycle of operation.

3,621,732

FASTENING FOR MOTOR VEHICLE-SAFETY STEERING COLUMNS

Herbert Kaniut, Cologne-Heimersdorf, Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 27, 1970, Ser. No. 15,170
Claims priority, application Germany, Mar. 5, 1969, P 19 11 054.4
Int. Cl. B62d *1/18*
U.S. Cl. 74—492 8 Claims



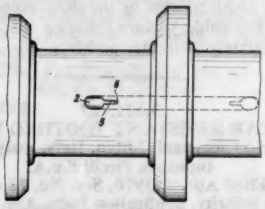
A releasable mounting means for an energy absorbing steering column that includes one or more sliding components received within a corresponding number of slots formed in a bracket. A portion of each slot is defined by a lug which partially encloses or grasps one of the sliding components and secures it to the bracket. The bracket is made of material sufficiently deformable to release the sliding components on application of a predetermined axial force to the upper end of the steering column.

3,621,733

INDUCTIVELY-HARDENED STEEL COMPONENTS CONTAINING AN OIL DUCT

Gerhard Seulen, Remscheid, and Hermann Kuhlbars, Remscheid-Luttringhausen, Germany, assignors to AEG-Elotherm G.m.b.H., Remscheid-Hasten, Germany

Filed Sept. 30, 1969, Ser. No. 862,394
Claims priority, application Germany, Oct. 9, 1968, P 18 02 027.4
Int. Cl. F16c *3/14*
U.S. Cl. 74—605 6 Claims



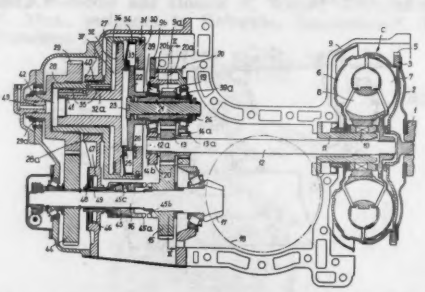
Inductively-hardened steel components containing an oil duct extending obliquely from a hardened surface thereof, e.g., crankshafts, tend to wear at the point where the oil duct meets the said hardened surface. The invention provides means whereby the wear is reduced, comprising a supplementary opening extending from the hardened surface to the oil duct on the side of the oil duct which makes an oblique angle with the hardened surface. In one embodiment of the invention the supplementary opening consists of a slot extending from the oil duct, and in another embodiment the supplementary opening consists of a bore extending to the said oil duct. Where two or more oil ducts extend from a common point on the hardened surface of the steel component the supplementary opening may be a complex slot having portions extending in the general direction of the said oil duct branches.

3,521,734

TORQUE-CONVERTER AND VARIABLE-RATIO TRANSMISSION MECHANISM

Pierre Bouthors and Philippe Quemerais, Billancourt, France, assignors to Regie Nationale des Usines Renault, Billancourt, and Automobiles Peugeot, Paris, France

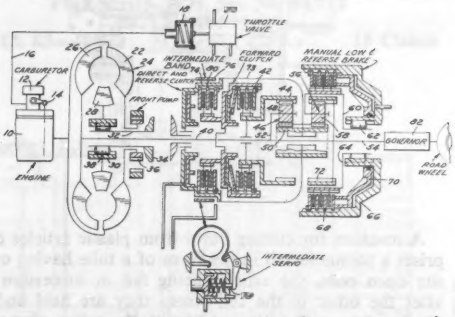
Filed Feb. 16, 1970, Ser. No. 11,585
Claims priority, application France, Mar. 5, 1969, 6906116
Int. Cl. F16h *15/04, 47/06*
U.S. Cl. 74—730 5 Claims



A torque-converter and variable-ratio transmission mechanism in which the torque converter has its output shaft drivingly connected to a friction-type variator formed by a disc rigid with an input shaft and interposed between a pair of rings rigid with an output shaft. The variator is adapted, according to the clamped or released condition of the rings in relation to the disc, to cause the variator to be connected to, or disconnected from, the drive. The output shaft of the converter carries a driving

pinion in constant meshing engagement with a pair of driven pinions, the first driven pinion being rigid with the input shaft of the variator, which has its output shaft connected to the output shaft of the mechanism via a couple of pinions providing the forward drive, the other driven pinion being mounted for loose rotation on the output shaft of the mechanism and provided with releasable coupling means for providing reverse drive without passing through the variator.

3,621,735
ELECTRONICALLY OPERATED HYDRAULIC CONTROLS
George E. Lemieux, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 15, 1969, Ser. No. 885,160
Int. Cl. B60k *17/04;* **F16h** *5/50*
U.S. Cl. 74—753 **8 Claims**

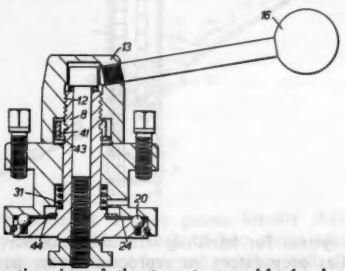


A pressure regulator valve system for an automatic control valve circuit in a multiple ratio power transmission comprising a pressure regulator valve situated in the valve circuit with a pressure source, an electrical pulse valve which establishes a predetermined pressure on a movable valve element of the regulator valve, the magnitude of the pressure being determined by the frequency of electrical voltage pulses applied to the pulse valve, the frequency in turn being controlled by electronic sensors that measure transmission output shaft speed and power input shaft torque.

ERRATA

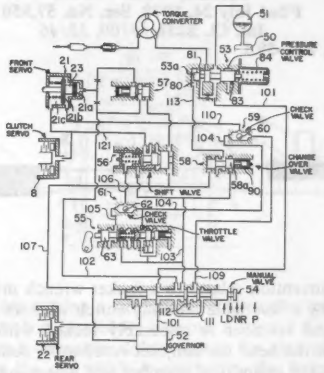
For Classes 74—868 and 75—170 see:
Patent Nos. 3,621,737 and 3,622,234

3,621,736
TURRET ASSEMBLIES
Frederic Reginald Stanley, Farnham, Surrey, England, assignor to H.C.F. (Turrets) Limited, London, England
Filed May 1, 1969, Ser. No. 821,561
Claims priority, application Great Britain, May 1, 1968, 20,663/68
Int. Cl. B23b *29/28*
U.S. Cl. 78—824 **11 Claims**



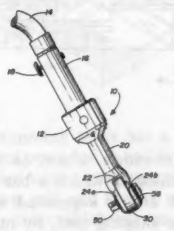
This invention is a lathe turret assembly having self-retained locating balls for correctly positioning it and having a handle which can turn it through a pre-determined discrete angle when a different tool is to be used.

3,621,737
OIL PRESSURE CONTROL SYSTEM FOR FLUID TYPE TRANSMISSION SYSTEM
Sumio Uozumi, Toyota-shi, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan
Filed July 28, 1969, Ser. No. 845,138
Claims priority, application Japan, July 31, 1968, 43/53,588
Int. Cl. B60k *21/08*
U.S. Cl. 74—868 **4 Claims**



This invention provides an oil pressure control system used for fluid type transmission consisting of a torque converter and a speed change gear provided with servo mechanisms. Over the broad range of the servo mechanism, not only the oil pressure controlled by oil pressure control valve but also the oil pressure corresponding to the engine throttle valve opening or vacuum pressure of the intake manifold is supplied by a separate circuit to the servo mechanism, so as to control the oil pressure control valve in accordance with the vehicle speed for relieving the impact at the automatic shift with the aid of appropriate servo capacity.

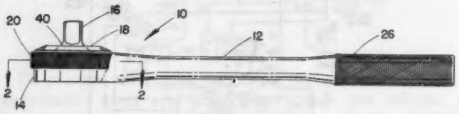
3,621,738
POWERED RATCHET WRENCH
Oren V. Northcutt, Rte. 1, Box 982, Dallas, Tex. 75216
Filed June 17, 1969, Ser. No. 834,033
Int. Cl. B25b *13/46*
U.S. Cl. 81—57.39 **21 Claims**



A ratchet wrench includes a shaft rotatable by a motor with a stud at one end of the shaft parallel and eccentrically disposed with respect to the longitudinal axis of the shaft. A ball is carried by a ratchet head and has a hole

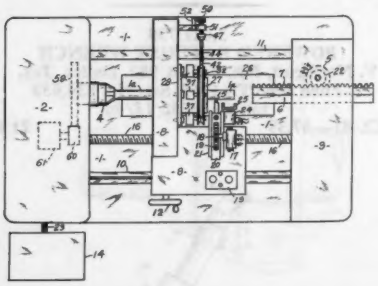
therein for receiving the stud on the shaft. Rotation of the shaft causes the ratchet head to oscillate. A wrench drive is mounted within the ratchet head and includes a pawl which engages teeth in the ratchet head to rotate the wrench drive upon oscillation of the ratchet head. A friction pawl is carried by the wrench drive to provide a resistive force on the wrench drive only during one direction of oscillation of the ratchet head. The direction of the ratchet action of the wrench drive may be selectively changed without changing the direction of rotation of the motor.

3,621,739
REVERSIBLE TOOL DRIVE
Wendell Seablom, 316 S. 138th St., Tacoma, Wash. 98444
Filed July 24, 1970, Ser. No. 57,950
Int. Cl. B25b *13/00, 13/46*
U.S. Cl. 81—59.1 **13 Claims**



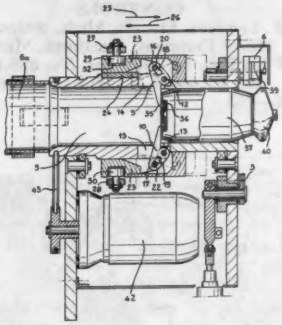
This invention relates to a socket wrench drive characterized by a reversible one-way clutch wherein a rotatable cylindrical member is releasably locked with a central cavity in the head for conjoint rotation by rollers wedged between the cylindrical member and a cam surface at the end of a radial recess opening onto said cavity. Spring elements are releasably held against the rollers by a control ring to bias same in either a "forward" or "reverse" position.

3,621,740
TURNING MACHINE
Albert G. Thomas, Charlottesville, Va., assignor to Teledyne, Inc., Los Angeles, Calif.
Filed Feb. 19, 1970, Ser. No. 12,744
Int. Cl. B23b *5/00*
U.S. Cl. 82—2 **6 Claims**



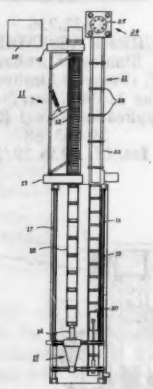
The present invention relates to an improved centerless turning machine in which a bar is tightly gripped in a rotating chuck and is supported near the free end of the bar, near the shaping tool, by means of a slip chuck which allows the bar to be turned or rotated therein. Novel features of this invention are automatic regulation of the clamping force of the slip chuck, means for breaking and directing chips from the bar, and movable trough-like means for catching and moving severed pieces of the bar.

3,621,741
MACHINE FOR CUTTING. MORE PARTICULARLY FOR CUTTING OFF THE CORES OF ARTICLES OF PLASTIC MATERIALS
Jacques Bourgeois, Lyon, France, assignor to Lesieur-Cotelle, Boulogne-sur-Seine, France
Filed July 1, 1969, Ser. No. 838,362
Claims priority, application France, July 2, 1968, 50,177
Int. Cl. B23b *3/04, 5/14*
U.S. Cl. 82—101 **5 Claims**



A machine for cutting burrs from plastic articles comprises a rotatable cell in the form of a tube having opposite open ends, the articles being fed in succession one after the other to the cell where they are held and rotated and brought into contact with the cutter whereafter the articles are fed through the other end of the cell under the action of a continuous suction applied thereto. The articles are held within the cell by means of a pair of pivotal claws which are extended into the cell to hold the article when it is being cut whereafter the claws are retracted to allow the article to pass to the outlet of the cell.

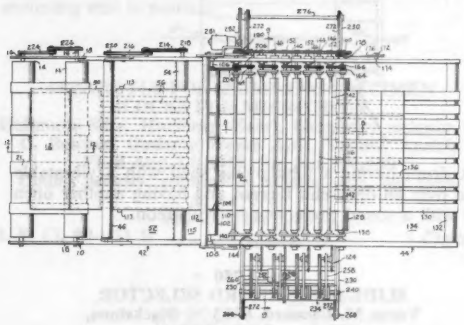
3,621,742
IRRADIATED FUEL PROCESSING SYSTEM
Wyvil R. Kendall, San Jose, Calif., assignor to General Electric Company
Filed Mar. 25, 1968, Ser. No. 715,602
Int. Cl. B26d *7/04, 7/08*
U.S. Cl. 83—42 **27 Claims**



A system for handling irradiated nuclear reactor fuel bundles preparatory to reprocessing the irradiated fuel contained therein is disclosed. This system includes a fuel bundle clamping table including means to remove bundle

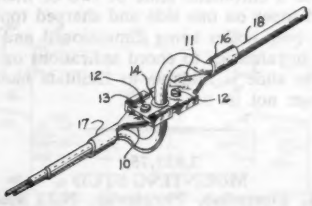
end fittings and to clamp the bundle in a fixed position while permitting longitudinal movement of the fuel rods through the bundle; a fuel rod pulling assembly including means for pulling fuel rods from the bundle, for handling the rods and for collecting groups of rods; a shear feed assembly including means to feed groups of fuel rods incrementally to a shear; and a shear assembly including means to simultaneously cut two small pieces from the end of each rod of a set with each shearing stroke. A process for performing the above-indicated operations is also disclosed. This system is simple, reliable and capable of being remotely operated, disassembled and modified.

3,621,743
CARPET TILE CUTTING MACHINE
James M. Feighery and Michael A. Lewallyn, Dalton, Ga., assignors to Tex-Del Corporation, Dalton, Ga.
Filed May 5, 1970, Ser. No. 34,773
Int. Cl. B26d *11/00*
U.S. Cl. 83—408 **15 Claims**



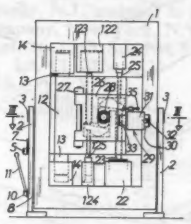
A cradle supports a roll of carpet for the pulling therefrom of the end of the carpet over horizontal work tables having a first section in which the carpet is cut longitudinally in strips during movement of the carpet and a second section in which the carpet is cut transversely while stationary to form tiles, the cutting taking place from beneath the carpet and only through the backing thereof and not through the pile.

3,621,744
CABLE CUTTER
John H. Kelly, Hartselle, Ala., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed June 4, 1970, Ser. No. 43,332
Int. Cl. B23d *15/00*
U.S. Cl. 83—198 **5 Claims**



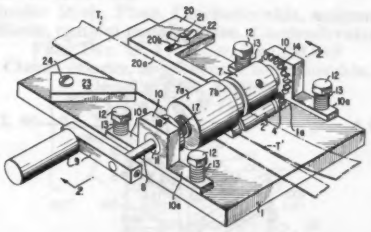
An electric cable or a rope passes loosely through aligned sharp-edged holes in each of two plates adapted to slide over one another but fastened together with rivets. The cable is fastened securely to each of the two plates. As overload tension is applied to the cable, the two plates are pulled apart in opposite direction in a sliding manner as the rivets are sheared and the cable is cut by the sharp edges of the holes as they move out of alignment.

3,621,745
SHEARING-ACTION ROD CUTTING DEVICE
Bernard André Cavalan, Paris, and François Kropin, Verneuil-sur-Avre, France, assignors to Chevallier SA., Verneuil-sur-Avre, and Paul Sarda, Paris, France, fractional part interest to each
Filed July 11, 1969, Ser. No. 840,980
Claims priority, application France, July 16, 1968, 159,381
Int. Cl. B26d *1/00, 7/02*
U.S. Cl. 83—198 **12 Claims**



A device for cutting a workpiece into lengths including a first die which is carried by a frame, a second die which is carried by a movable slider, means for clamping the workpiece in the die which is carried by the frame, and means, which are independent of the preceding ones, for successively clamping the workpiece in the die which is carried by the slider and giving said slider a translatory motion in relation to the frame, whereby the workpiece is sheared in the dividing plane between the two dies.

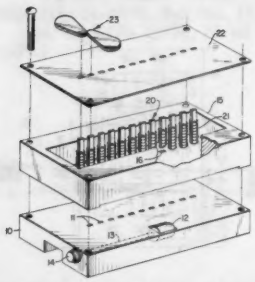
3,621,746
TRIMMERS
Hudson Womack, Box 14, McMinnville, Tenn. 37110
Filed Apr. 24, 1970, Ser. No. 31,644
Int. Cl. B26d *1/28*
U.S. Cl. 83—430 **5 Claims**



The machine for trimming tapes has a base having an opening therein adjacent one edge. A roll is journaled in the opening and is provided with a cutting end. A second roll cooperates with the first roll and has an enlarged portion providing a cutting shoulder which engages the cutting end of the first roll. A shaft on the base carries the second roll which is axially slidable thereon. Bearings on the base at the ends of the shaft yieldably maintain the rolls in peripheral contact. Intermeshing gears on the rolls rotate the rolls in opposite directions to feed a tape therethrough when caught in the bite of the rolls. A spring on the shaft

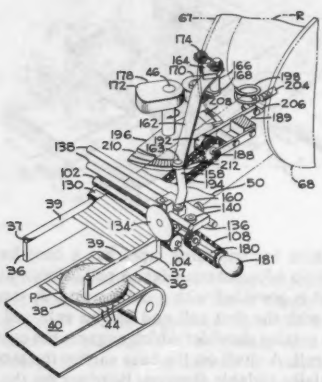
yieldably urges the cutting shoulder into contact with the cutting end of the first roll to longitudinally sever the tape passing between the rolls. And guides on the base direct the tape into the bite of the rolls in desired relation to the cutting shoulder.

3,621,747
CARD PUNCH
William Worthington, 2921 Brook Drive, Falls Church, Va. 22042
Filed Nov. 24, 1969, Ser. No. 879,394
Int. Cl. G06k *1/08*
U.S. Cl. 83—436 **3 Claims**



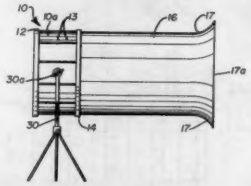
A portable data card punch has a lower card support and punch die member, a superimposed card guide and punch housing member, and an upper punch guide member. A manually operated friction roller in the lower member serves to advance the card. Punches are resiliently mounted to extend through the housing member and the guide member. Interfitting plastic caps are secured to the tops of the punches whereby the punches may be manually actuated to punch selected positions on the data card.

3,621,748
FOOD MOLDING MACHINE
Eugene F. Felstehausen, Hoopeston, Ill., assignor to FMC Corporation, San Jose, Calif.
Original application Dec. 1, 1966, Ser. No. 598,288, now Patent No. 3,461,483, dated Aug. 19, 1969. Divided and this application Mar. 24, 1969, Ser. No. 858,208
Int. Cl. B23d *19/02*
U.S. Cl. 83—487 **4 Claims**



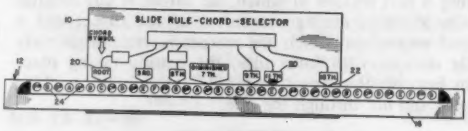
The leading end portion of a rolled web of separator material, such as waxed paper, is advanced into underlying relation to the patty discharge station of a food molding machine and is severed to form a separate sheet which intercepts the patty dropped thereon so that the patties in an accumulated stack of patties are separated from one another. Under the present invention, a laterally reciprocating carriage mounts a web cutting wheel by means of a removable stub axle that is resiliently loaded from its end point. Also, the web cutter carriage is positively driven during the cutting stroke which tensions a carriage return spring, the carriage being released at the end of the cutting stroke so that the spring can rapidly restore the carriage to its initial position.

3,621,749
SOUND PROJECTOR HORN AND SINGLE HEAD DRUM COMBINATION
Alan Lee Aluisi, 4359 E. Batavia Place, Denver, Colo. 80220
Filed June 18, 1970, Ser. No. 47,181
Int. Cl. G10d *13/02*
U.S. Cl. 84—411 **18 Claims**



A drum having a tubular-like shell with a vibratable head over an open end thereof and having another open end with a sound projecting horn thereon.

3,621,750
SLIDE RULE CHORD SELECTOR
Verna M. Leonard, 6353 N. Blackstone, Fresno, Calif. 93721
Filed June 1, 1970, Ser. No. 42,251
Int. Cl. G09b *15/02*
U.S. Cl. 84—471 **7 Claims**

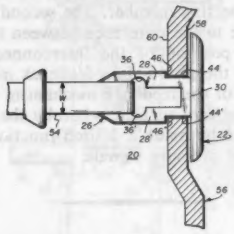


A simple mechanical device for instant finding of the names and position of the notes in the chromatic scale used in building the various chords and polychords including the thirteenth chord. This chord finder is constructed from sheet material with a strip body portion and an elongated slide, a return flap on the bottom edge of the strip body portion functioning as a rail upon which the slide is saddled for longitudinal sliding adjustment. The latter carries a chromatic scale of two or more octaves with flatted tones on one side and sharped tones on the other side, both scales being dimensioned and arranged to be read in reference to chord indications on the body portion. The slide is foldable to facilitate handling and storage when not in use.

3,621,751
MOUNTING STUD
Arthur A. Fiorentino, Piscataway, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.
Filed May 22, 1970, Ser. No. 39,729
Int. Cl. F16b *19/00*
U.S. Cl. 85—5 R **11 Claims**

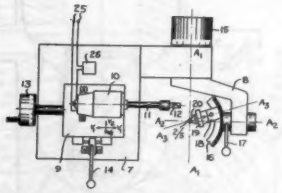
The invention is directed to an improved unitary, self-locking, readily attachable mounting stud. Extending outwardly from a relatively flat button-like head member is

a body member comprising a pair of generally resilient, spaced apart, recessed, elongated, interconnected portions adapted to receive therebetween a generally elongated member. The elongated portions are compressible inwardly normal to the longitudinal axis thereof to permit the



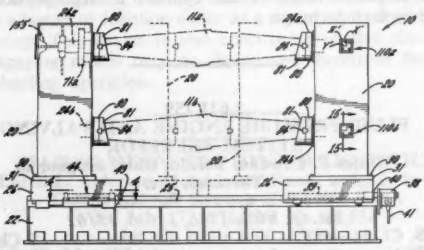
body member to be forcibly urged through a dimensionally restrictive aperture in a panel or similar structure. A recessed portion of the body member directly adjacent the head member serves as a locking means to secure the mounting stud in position.

3,621,752
APPARATUS FOR TRIMMING SPECIMEN BLOCKS FOR MICROTOMY
Hellmuth Sitte, Homburg (Saar), Germany, assignor to C. Reichert Optische Werke A.G., Vienna, Austria
Filed Aug. 14, 1969, Ser. No. 850,137
Claims priority, application Austria, Aug. 30, 1968, A 8,470/68
Int. Cl. B23c *3/00*
U.S. Cl. 90—11 R **2 Claims**



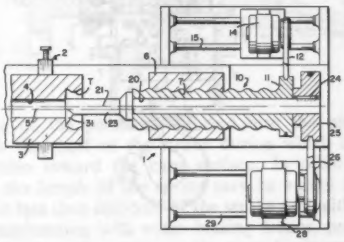
A milling apparatus in which the cutter is movable axially and transversely and the work piece is rotatable about infinitely variable axes.

3,621,753
DOUBLE TRUNNION ACCESSORY FOR MILLING MACHINES
Calvin S. Gladoske, Fond du Lac, Wis., assignor to Giddings & Lewis, Inc., Fond du Lac, Wis.
Filed Sept. 11, 1969, Ser. No. 857,160
Int. Cl. B23c *1/04, 3/04*
U.S. Cl. 90—11 R **20 Claims**



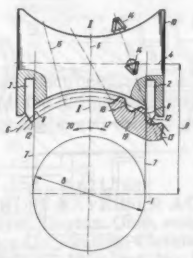
A machine tool work support having a pair of spaced columns each rotatably carrying a pair of work supporting trunnions. The trunnions of one column are in axial alignment with the trunnions of the other column so that work pieces may be suspended between the aligned trunnions for rotation therewith to present all sides of the work pieces about the axes of rotation to the machine tool. Each column has a servo motor which operates through a preloaded backlash free gear transmission to synchronously drive the trunnions of the respective column for precisely positioning the work pieces at a determined angular orientation and also for rotating the work pieces during a machining operation to provide an axis of motion in addition to the axes of motion of the machine tool.

3,621,754
METHOD AND APPARATUS FOR FORMING THREADS
J. D. Ditson, Asbury, N.J., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed Sept. 26, 1969, Ser. No. 861,283
Int. Cl. B23c *3/28*
U.S. Cl. 90—11.58 **10 Claims**



A method and apparatus for cutting threads on a workpiece. The workpiece is held stationary. The cutting tool axis is parallel and eccentric to the longitudinal axis of the workpiece. The cutting tool is rotated at high speed about its own axis to make a circular cut in the workpiece. The cutting tool axis is orbited at a low rotational speed about the axis of the workpiece and advanced along the axial length of the workpiece in timed relation to the orbital movement to thereby form a thread on the workpiece.

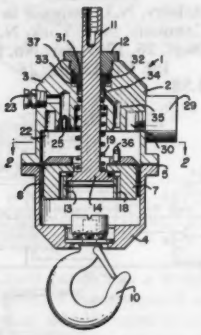
3,621,755
METHOD OF MANUFACTURE OF A GLOBOID WHEEL AND AN ARRANGEMENT FOR ITS MANUFACTURE
Bohuslav Strejc, Plzen, Czechoslovakia, assignor to Skoda, narodni podnik, Plzen, Czechoslovakia
Filed Dec. 29, 1969, Ser. No. 888,645
Claims priority, application Czechoslovakia, Dec. 29, 1968, 8,880/68
Int. Cl. B23f *13/06*
U.S. Cl. 90—9.6 **4 Claims**



The globoid worm wheel is worked by means of a multiknife milling head which both rotate at the transmission ratio of the globoid gear, the workpiece being radially fed into engagement with said milling head until

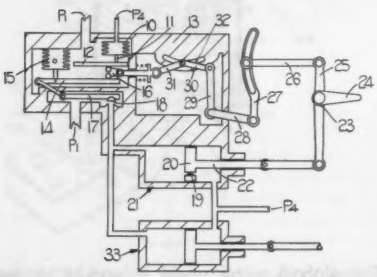
the distance of their rotation axis coincides with the proper distance of the axis of the globoid gear, whereafter the external knives of the milling head are removed and the workpiece finished by the remaining knives in the course of their rotation at their transmission ratio after a limited relative turning of the workpiece with respect to the tool.

3,621,756
LOAD BALANCER
Otmar M. Ulbing, Berkshire, N.Y., assignor to Ingersoll-Rand Company, New York, N.Y.
Filed May 20, 1969, Ser. No. 826,253
Int. Cl. F15b *15/26;* **F01b** *15/00*
U.S. Cl. 91—43 **3 Claims**



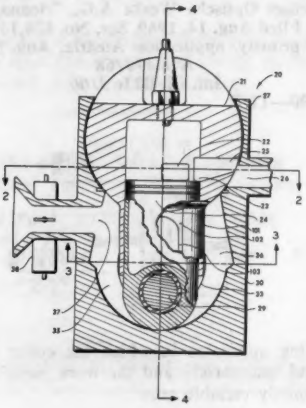
A load balancer adapted to be suspended from a hoist and to support a load in a floating balanced manner. The load balancer contains a pneumatic chamber and a valve means for automatically admitting pneumatic pressure into and exhausting it from the chamber to automatically maintain the balancer piston in a position relative to the chamber intermediate the ends of its travel stroke. A brake grips the piston to restrict its speed of travel to prevent its oscillation and this brake grips the piston progressively tighter as the pressure in the pneumatic chamber increases.

3,621,757
SERVO MECHANISM RESPONSIVE TO THE RATIO OF TWO FLUID PRESSURE SIGNALS
Harry Simister Bottoms, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Nov. 14, 1969, Ser. No. 876,960
Claims priority, application Great Britain, Nov. 14, 1968, 54,068/68
Int. Cl. F15b *15/17, 9/10, 13/16*
U.S. Cl. 91—49 **10 Claims**



The invention relates to a servo-mechanism for producing an output movement proportional to a ratio of two fluid pressure signals. The output movement is provided by the displacement of a piston in a double acting piston and cylinder unit and having an orifice controlled bypass. Pressure drop across the bypass is controlled by a lever movable in response to one of the signals and also in response to the force exerted by a second lever via an interconnecting member. The second lever is movable in response to the difference between the two signal pressures. The position of the interconnecting member is controlled by the piston via a feedback mechanism. An interconnection of the feedback mechanism is constrained to move along a cam surface, whereby the displacement of the piston can be made a desired function of the ratio of the two fluid pressure signals.

3,621,758
RECIPROCATING PISTON MACHINE
John Herbert Beveridge, P.O. Box 485, Folsom, Calif. 95630
Continuation-in-part of abandoned application Ser. No. 717,085, Mar. 29, 1968. This application June 16, 1970, Ser. No. 46,713
Int. Cl. F01b *15/06;* **F02b** *59/00, 33/04*
U.S. Cl. 91—176 **2 Claims**

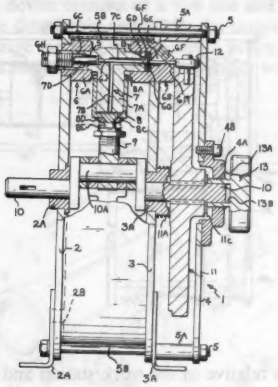


A reciprocating piston-pivotally oscillating cylinder internal combustion machine is provided in which the components are designed and constructed in a manner so as to increase the aspirating capacity per cycle of the machine, and in which a simple and effective means is provided for closing the cylinder exhaust port independently of the piston reciprocating motion relative to the cylinder so as to retain in the cylinder a large portion of the aspirated charge.

3,621,759
FLUID PRESSURE ENGINE AND VALVING SYSTEM THEREFOR
Walter F. Cousino, Toledo, Ohio, assignor to Thermad, Inc.
Filed Feb. 6, 1970, Ser. No. 9,233
Int. Cl. F01b *1/06, 13/06, 15/02*
U.S. Cl. 91—481 **7 Claims**

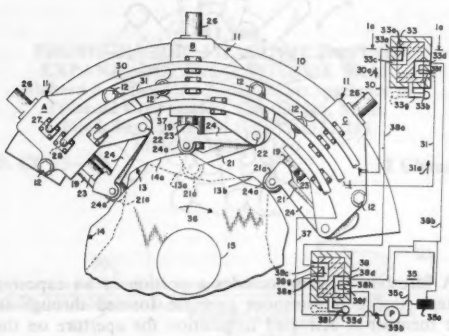
The invention relates to a valving system for fluid pressure engines, such as steam engines, featuring the utilization of spring pressed check valves, such as a ball, for controlling the supply of pressured fluid to the engine,

each such valve being periodically actuated to an open position by a momentarily applied impact force. The invention also provides an inexpensive construction for a



relatively small fluid pressure engine, permitting the utilization of such engines in applications such as domestic lawn mowers, small garden tractors, or marine engines.

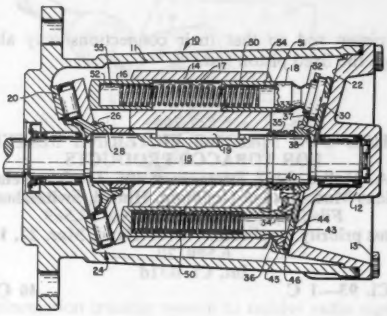
3,621,760
UNIVERSAL POWER UNIT
Robert W. Goode, 2708 Peach Tree Lane, Arlington, Tex. 76010
Filed June 2, 1969, Ser. No. 829,490
Int. Cl. F01b *1/06, 13/06*
U.S. Cl. 91—481 **8 Claims**



A hydraulic device adapted either for rotary or linear motion, this device employs one or more universal power units, each unit consisting essentially of a power piston or pistons and a valve or valves provided with means adapted to engage a cam track or tracks such that the power unit is adapted to function either as a motor or load such as a pump. This device is also constructed so that the track engaging means may be disengaged therefrom for free wheeling operation.

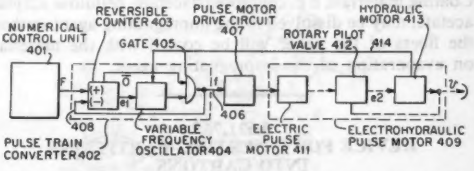
3,621,761
BIASING MEANS FOR HYDRAULIC DEVICE
Loren L. Alderson, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.
Filed July 27, 1970, Ser. No. 58,534
Int. Cl. F01b *3/00, 13/00*
U.S. Cl. 91—491 **16 Claims**

A positive displacement fluid device having a biasing spring associated with the pistons for urging the pistons of the fluid device toward a camming surface which induces piston reciprocation. The biasing springs are of a predetermined length less than the length of the piston stroke so as to engage and act on the piston only during a predetermined portion of the piston stroke thereby reducing spring flexure and fatigue, yet providing sufficient biasing force to continuously overcome the tendency of the piston to lift off the cam. In the preferred embodiment, the length of the springs approximate the mean



distance of the piston stroke and bias the piston only through that half of the stroke during which the piston accelerates toward the cam surface. In other arrangements, the length of the spring may be varied to act for more or less than one-half of the stroke and, either singly or in conjunction with other biasing means, provide initial preload on the piston at the zero displacement position of variable displacement units.

3,621,762
ERROR-PREVENTING DRIVING SYSTEM FOR ELECTROHYDRAULIC PULSE MOTOR
Yo Ikebe and Jun Ikebe, Tokyo, and Seiuemon Inaba, Kawasaki-shi, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Nov. 17, 1969, Ser. No. 877,209
Claims priority, application Japan, Nov. 21, 1968, 43/85,478
Int. Cl. F01b *3/02, 13/04;* **F15b** *9/10*
U.S. Cl. 91—503 **2 Claims**

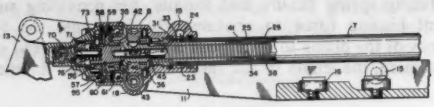


The gain of an electrohydraulic motor is controlled in accordance with the torque load of the motor to maintain a constant total gain and thereby decrease error.

3,621,763
FAN THRUST REVERSER ACTUATOR
Howard M. Geyer, Dayton, Ohio, assignor to Pneumo Dynamics Corporation, Cleveland, Ohio
Filed July 17, 1969, Ser. No. 842,660
Int. Cl. F01b *15/02;* **F15b** *15/26*
U.S. Cl. 92—17 **11 Claims**

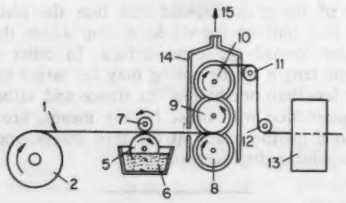
A fluid actuator in which the piston rod is fixed and the cylinder is movable, and all of the fluid connections for

the cylinder are through the fixed piston rod. Synchronizing and locking mechanisms are also contained in the



fixed piston rod so that their connections may also be through the fixed piston rod.

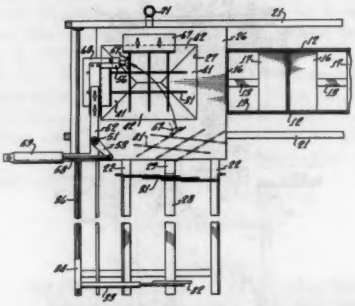
3,621,764
METHOD FOR MAKING FILTERING MATERIAL FOR TOBACCO PRODUCTS
Paul A. Muller, 9497 Triesenberg 405, Liechtenstein, and Hans Muster, 8340 Hadlikon, Hinwil, Switzerland
Filed Apr. 28, 1970, Ser. No. 32,569
Claims priority, application Switzerland, Mar. 24, 1970, 6,590/70
Int. Cl. B31d
U.S. Cl. 93—1 C **40 Claims**



Method for treating paper to render it particularly adapted to be gathered and enclosed in a wrapper to make a filter cord subdividable into efficient cigarette filters. The paper is first moistened with a volatile, impregnating agent to prevent undue tearing in a longitudinal grooving and lateral stretching treatment which loosens and exposes fibers by passage through the nip between heated meshing rollers having alternating circumferential ribs and grooves. The impregnating agent has a boiling point and heat of evaporation less than those of water to reduce drying time. Coating materials, e.g. cellulose triacetate, cellulose acrylic acetate, may be dissolved in the impregnating agent so that the fibers of the paper will be coated with the material on evaporation of the impregnating agent.

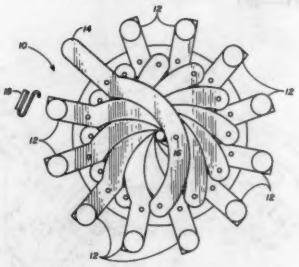
3,621,765
DEVICE FOR INSERTING PARTITIONS INTO CARTONS
Charles L. Sootheran, Fullerton, Ralph L. Johnson, San Gabriel, and Frederick A. Grant, Temple City, Calif., assignors to Glass Containers Corporation
Filed May 5, 1969, Ser. No. 821,574
Int. Cl. B31b *1/80, 11/02;* **B65b** *35/54*
U.S. Cl. 93—37 R **11 Claims**

A conveyor system for handling shipping cartons is provided with a work station at which a partitioning assembly of criss-crossed divider walls is to be inserted. The work station has a sectional platform comprised of a plurality of trapdoor elements for receiving and supporting a partitioning assembly above the carton conveyor. When a carton has been brought into position below the platform, a reciprocable ram engages the partitioning assembly and moves it downwardly into the carton, the trapdoor elements yielding and functioning as a guiding chute, as well as correcting minor misalignment



of the carton relative to the work station and holding the carton flaps out of the path of the partitioning assembly.

3,621,766
FORESHOOT SYSTEM
Henry A. Giesecke, Oklahoma City, Okla., assignor to Apromat, Incorporated, Oklahoma City, Okla.
Filed Sept. 23, 1969, Ser. No. 860,219
Int. Cl. G03b
U.S. Cl. 95—1 **13 Claims**

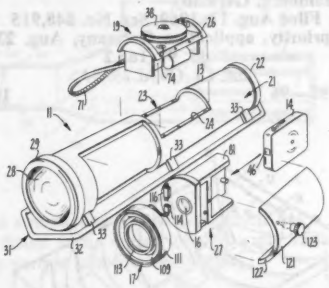


A foreshoot system includes a portion of an exposing system having a foreshoot aperture formed through it. The member is activated to position the aperture on the optical axis of the exposing system and to simultaneously close a light flash activating contact. In one embodiment of the system, the aperture comprises a pinhole formed through one leaf of an iris diaphragm. The leaf is activated to cover the diaphragm opening and to open the pinhole. In another embodiment, the aperture is formed in a shutter blade and includes a lens system for directing light through a focal point located at the diaphragm of the exposing system.

3,621,767
PIPE CAMERA FOR PHOTOGRAPHING THE INTERIOR OF A PIPE OR THE LIKE
William G. Hyzer, 136 S. Garfield, Janesville, Wis. 53545, and Ernest M. Whitley, 3061 Stelling Drive, Palo Alto, Calif. 94303
Filed June 11, 1969, Ser. No. 832,253
Int. Cl. G03b *9/70*
U.S. Cl. 95—11.5 R **17 Claims**

A pipe camera for photographing the interior of a pipe or the like at regular intervals comprising a watertight

housing, a transport device for moving the camera through the pipe, and a camera drive mechanism for operating the camera independently of the transport device but in response to movement of the camera through the pipe. The transport device consists of a tow line and skid members which are detachably secured to the camera housing. The camera drive mecahnism includes a pulley, a train of drive elements for interconnecting the pulley with the film



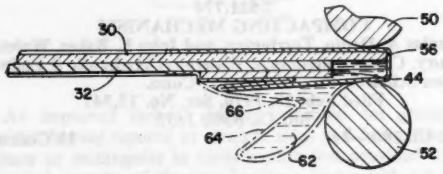
advance, the shutter and the flash element of the camera, and a clutch arrangement for providing a single direction of operation of the drive elements irrespective of the direction of rotation of the pulley. The operation of the flash element is synchronized with the opening of the shutter. A counter may also be connected to the train of drive elements for indicating the degree of camera movement through the pipe.

3,621,768

PHOTOGRAPHIC FILM UNIT HAVING EXPANDABLE HIGH VOLUME TRAP

Richard J. Chen, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 19, 1969, Ser. No. 851,291
Int. Cl. G03b *17/50*
U.S. Cl. 95—13 **12 Claims**



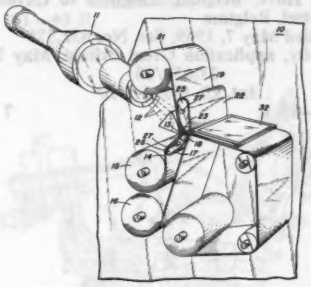
A self-developing film unit including a photosensitive sheet and a transparent second sheet held in face-to-face relation with respect to the photosensitive sheet. The sheets are bound together at their sides and a container of liquid processing composition is situated near a leading edge of the sheets. The sheets are adapted to be moved relative to pressure-applying rollers, leading edge foremost, thereby spreading the liquid processing composition across the area of the photosensitive sheet that has been exposed through the transparent sheet. Liquid processing composition in excess of that needed to completely cover the exposed area of the photosensitive sheet is collected in trapping means near the trailing edge of the face-to-face sheets in a chamber that responds to an increase in hydraulic pressure of the excess liquid processing composition to increase its volume.

3,621,769

CONTINUOUS RAPID ACCESS FILM PROCESSOR

Andrew A. Blatz, Cinnaminson, N.J., assignor to the United States of America as represented by the Department of the Navy

Filed Oct. 14, 1968, Ser. No. 767,177
Int. Cl. G03b *17/50*
U.S. Cl. 95—14 **6 Claims**



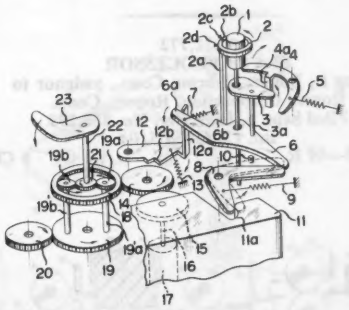
An information transfer system to receive radio signals and convert them to light waves which impinge a photographic film. A processing film is brought into laminating contact with the exposed film to develop it and during the laminating contact the films are heated after which they are delaminated and wound on separate rolls. The processing film in the form of a positive print is viewed and stored. The photographic film, which is the negative, is also stored for future use The process is continuous and the system provides a permanent record within minutes of the receipt of the information.

3,621,770

MULTIPLE-EXPOSURE DEVICE

Tomio Tsuruoka, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

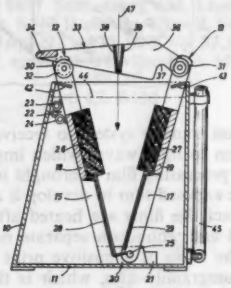
Filed Apr. 17, 1969, Ser. No. 816,893
Claims priority, application Japan, Apr. 28, 1968, 43/32,862
Int. Cl. G03b *17/42, 9/68*
U.S. Cl. 95—31 R **10 Claims**



A multiple-exposure device for a camera comprising a film advance or winding member, a shutter charging mechanism and a film wind up mechanism employs a differential gear mechanism. A stop member, and a manually operable switching member which actuates the stop member, are provided in the film wind up mechanism. To make multiple-exposures, the stop member is actuated by the manually operable switching member

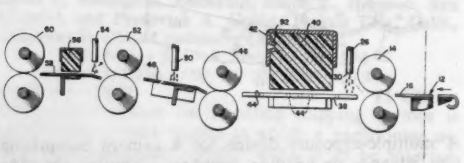
to stop the film wind up mechanism and to enable only the shutter charging mechanism to operate. As a result, multiple-exposure operation is afforded until the switching member is returned to normal double exposure prevention operation.

3,621,771
PHOTOGRAPHIC PROCESSING DEVICE
Emile Frans Stievenart, Hoboken, and Marcel Nicolas Vrancken, Hove, Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium
Filed May 7, 1969, Ser. No. 822,378
Claims priority, application Great Britain, May 7, 1968, 21,654/68
Int. Cl. G03d *3/10*
U.S. Cl. 95—89 R **7 Claims**



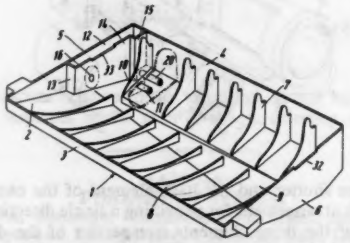
Apparatus for developing sheet material including a recording layer having differentially solvent-soluble areas therein by removing the more soluble areas. The apparatus consists of cooperating sheet rubbing members and squeeze rollers which are carried respectively within and above a container of solvent on frame sections hinged together about a horizontal axis at their lower ends. The hinge permits the rubbing members and rollers to be separated for the admission of the sheet material and brought together for frictionally engaging the sheet material on removal thereof from the container by rotation of said squeeze rollers. At least one rubbing member has a surface of porous resilient material for contacting said recording layer.

3,621,772
PLATE PROCESSOR
Irving R. Bogue, Hebron, Conn., assignor to Rogers Corporation, Rogers, Conn.
Filed Sept. 4, 1969, Ser. No. 855,299
Int. Cl. G03d *5/04*
U.S. Cl. 95—89 R **6 Claims**



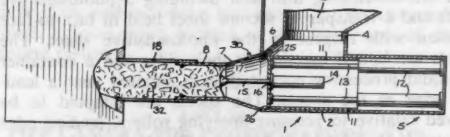
A processor is presented for lithographic plates wherein the plate is advanced through a series of opposed rollers to successive processing stations. The developer is delivered through a series of spaced apart, individually supplied dispensing ports, each of the ports being fed by a positive displacement pump, and the developer is scrubbed on the plate by a unitary oscillating sponge. Oscillation and deactivation of successive stations throughout the processor are time-coordinated with the passage of the plate through the processor.

3,621,773
DEVELOPING DEVICE
Walter Limberger and Jürgen Limberger, Hamburg-Poppenbuttel, Germany, assignors to Lumoprint Zindler KG., Hamburg, Germany
Filed Aug. 11, 1969, Ser. No. 848,915
Claims priority, application Germany, Aug. 23, 1968, P 17 97 165.2
Int. Cl. G03d *13/04*
U.S. Cl. 95—96 **10 Claims**



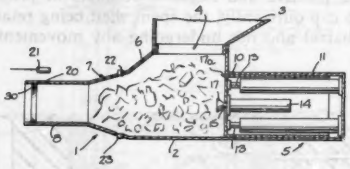
A developing device for a transfer method using two different materials each of which is guided through a different treatment tank. The treatment tanks are nested together and connections are provided to supply separate treatment fluid to each of the treatment tanks. The lower reatment tank has a chamber formed along a part of one side with an opening into the chamber. The upper treatment tank which nests into the lower one has a socket extending from its side which fits into the opening into the chamber for providing fluid communication between the chamber and the upper treatment tank. Supports are formed on the upper treatment tank which fit into abutments on the lower treatment tank for positioning the treatment tanks in a nested arrangement and maintaining the ocket in position within the opening into the chamber.

3,621,774
COMPACTING MECHANISM
Douglas A. Dedio, Torrington, and John E. Baker, Waterbury, Conn., assignors to Waterbury Hydraulic & Pollution Sciences, Inc., Waterbury, Conn.
Filed Feb. 18, 1970, Ser. No. 12,347
Int. Cl. B30b *1/32*
U.S. Cl. 100—74 **11 Claims**



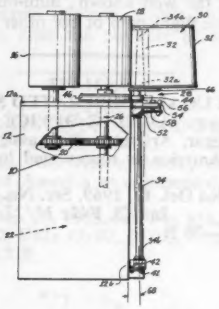
A refuse compacting mechanism which has a sealing gate adjacent its discharge section to seal off the discharge section from the hopper section of said mechanism. When the mechanism is used with a sealed air type incinerator the sealing gate permits incineration to proceed under the controlled conditions existing within the incinerator.

3,621,775
COMPACTING MECHANISM
Douglas A. Dedio, Torrington, and John E. Baker, Waterbury, Conn., assignors to Waterbury Hydraulic & Pollution Sciences, Inc., Waterbury, Conn.
Filed July 31, 1969, Ser. No. 846,542
Int. Cl. B30b 15/16
U.S. Cl. 100—49 17 Claims



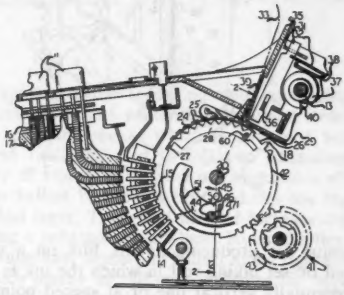
A refuse compacting mechanism which has a variable restricted throat in its outlet tube to apply sufficient resistance to permit effective compacting.

3,621,776
VERTICAL GRAINING MACHINE
Kurt G. Savke, 3934 Farrel Drive, Cincinnati, Ohio 45211
Filed May 18, 1970, Ser. No. 38,434
Int. Cl. B41f 17/18, 17/28
U.S. Cl. 101—38 R 10 Claims



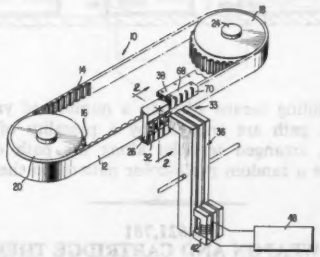
An improved vertical graining machine, for graining articles having tapered or straight sides and being round, square or rectangular in cross section and provided with rounded corners, of the type having a frame with a horizontal surface mounting substantially vertical master and printing rolls, the master roll having a graining pattern etched thereon and being contiguous with the printing roll, inking means to ink the master roll, gear means joining the master and printing rolls, drive means mounted within the frame and connected directly to at least the printing roll, and work holding means for holding the articles to be grained contiguous with the printing roll. The work holding means comprises a vertical back-up pressure roll, a pressure roll drive shaft adjacent the frame and coaxial with the pressure roll, the drive shaft mounting the pressure roll at one end thereof and being pivotal about the other end so as to adjust the position of the pressure roll as desired, the pressure roll drive shaft being operatively connected intermediate its ends to the drive means of the graining machine so that the surface speed of the large base of the pressure roll is substantially identical with the surface speed of the printing roll, and means to lock the pressure roll drive shaft and thus the pressure roll in a desired position.

3,621,777
TYPE SECTOR SETTING MEANS IN DATA PRINTERS
John G. Clary, Pasadena, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.
Filed Mar. 4, 1970, Ser. No. 16,316
Int. Cl. B41j 1/58
U.S. Cl. 101—93 R 7 Claims



The printing sectors of an adding or calculating machine are provided with outwardly yieldable type carrying sections. An aligning member is movable outwardly into engagement with detenting notches in the sections, the member flexing the sections to form a solid base against which type hammers impact.

3,621,778
TYPE SLUG MOUNTING FOR HIGH SPEED CHAIN PRINTER
David J. Ripple and Joseph N. Bond, Commack, N.Y., assignors to Potter Instrument Company, Inc., Plainview, N.Y.
Continuation of application Ser. No. 778,631, Nov. 25, 1968. This application Mar. 10, 1970, Ser. No. 17,043
Int. Cl. B41j 1/20
U.S. Cl. 101—93 15 Claims

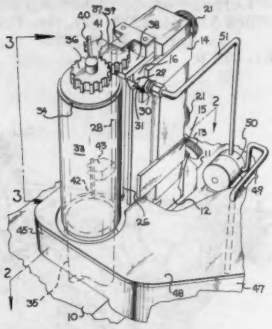


A high speed chain-type printer having a plurality of relatively wide, multi-character type slugs mounted on the print type carrier in close proximity to each other. The carrier is an endless toothed belt driven by gears in mesh with its teeth. The slugs are mounted on the belt by cylindrical pins straddling selected teeth on the belt. Spring fingers are also provided at the print station to urge the type slugs against a back-up means.

3,621,779
VERTICAL INK FOUNTAIN

David G. Carl, Sylvania, and John R. Johnson and Jack H. Myers, Toledo, Ohio, assignors to Owens-Illinois, Inc.

Filed July 2, 1969, Ser. No. 838,477
Int. Cl. B41f *31/12*; B41l *27/10*
U.S. Cl. 101—366 4 Claims

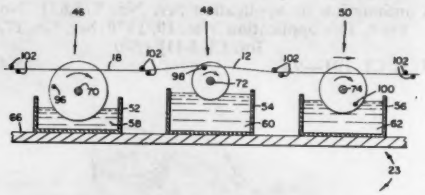


Apparatus for producing an ink film on a vartically positioned off-set inking roll in which the ink is supplied in a substantially vertical line or at spaced points to the surface of the ink roll and an adjustably positioned, rotating doctor-roll is utilized to control the thickness of the ink film which is produced on the inking roll for an off-set printing or decorating process.

3,621,780
PRODUCTION OF RANDOM DYED PILE TEXTILES

John G. Tillotson, Dalton, Ga., assignor to Advance Finishing, Inc., Dalton, Ga.

Original application June 26, 1967, Ser. No. 648,652. Divided and this application Mar. 21, 1969, Ser. No. 851,512
Int. Cl. B41f *17/10*
U.S. Cl. 101—172 2 Claims



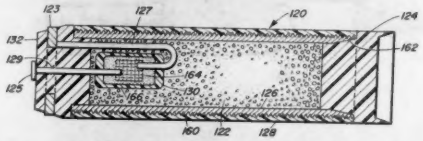
Dye printing means wherein a number of yarns in a horizontal path are engaged by a plurality of printing bar units, arranged seriatim along the path of travel, to produce a random multi-color pattern on the yarns.

3,621,781
HAND WEAPON AND CARTRIDGE THEREFOR

Erich Cornelius Johnsen, 1205 Broad St., Victoria, British Columbia, Canada

Filed June 11, 1968, Ser. No. 736,196
Int. Cl. F42b *5/08*
U.S. Cl. 102—38 10 Claims

The disclosure relates to cartridges for guns composed of a steel cartridge sleeve having a Teflon or nylon, etc., jacket therearound to prevent excessive friction. In one embodiment of the disclosure, the sleeve is closed at the front end by a nylon top cap and a main charge is positioned immediately behind the top cap and within the steel sleeve. At the rear portion of the steel sleeve, there is positioned a nylon end cap which is secured within the sleeve, the end cap including a negative electrical contact passing from the outer portion thereof into the main body of the sleeve and a positive electrical contact also passing therethrough into the inner portion of the sleeve. Within the sleeve is positioned a glass or plastic capsule which encloses an explosive composition positioned between the positive and negative contacts. The cartridge is designed to cause an explosion upon the placement of the voltage across the positive and negative contacts to project the nylon top cap outwardly, the spent shell being retained in the gun barrel and not undergoing any movement.



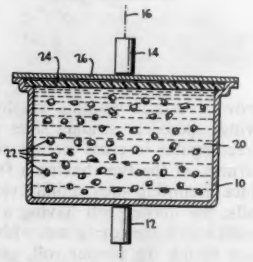
A second embodiment of the disclosure sets forth a cartridge having a two-part sleeve and a steel disc therebetween, only the forward portion of the sleeve being projected upon explosion within the cartridge, the other portion being retained within the barrel of the gun.

A third embodiment of the disclosure sets forth an armor piercing projectile unit wherein a leading projectile is followed by an explosive trailing projectile, the leading projectile providing an opening for the trailing projectile to pass through and provide an explosion due to inertial impact. An end cap, which is provided as in prior embodiments, forms the well known "dum-dum" projectile and drops from the flight path of the other two projectiles.

3,621,782
CENTRIFUGALLY OPERATED SAFETY AND ARMING DEVICE

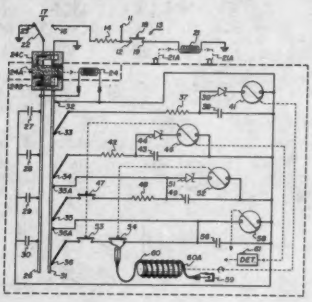
Allan M. Biggar, Arlington, Va., assignor to the United States of America as represented by the Secretary of the Army

Filed Oct. 17, 1969, Ser. No. 867,165
Int. Cl. F42c *15/22*
U.S. Cl. 102—70 R 6 Claims



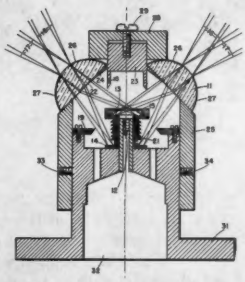
A safety and arming device for use in spin-operated munition fuzes. A container placed along the spin axis of the explosive train is filled with a fluid in which are randomly spaced explosive granules of a density less than that of the fluid. The mixture, in addition to providing a detonation wave barrier, maintains the explosive train out of line prior to launch. After launching, the centrifugal force due to spin acts to align the less dense explosive granules along the axis of rotation of the device, thus completing the explosive train and arming the fuze.

3,621,783
RETARDED BOMB FUZE
Howell M. Sumrall, 4447 Marraco Drive, San Diego, Calif. 92115
Filed Feb. 9, 1970, Ser. No. 9,832
Int. Cl. F42c 11/04, 15/12, 15/40
U.S. Cl. 102—70.2 R 4 Claims



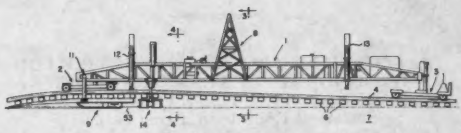
A retarded bomb fuze which requires a first arming actuation for charging a bank of capacitors; one of the capacitors being coupled through an RC network and a Zener diode to a bellows motor for paying-out a tethered switch; a second capacitor operates through an RC time build-up to operate a second bellows motor for enabling a third and fourth circuit; a third capacitor discharges through an RC time network to operate a third bellows motor which acts as a time-delay destruct should other firing signals fail, and a tethered all-attitude impact switch comprising two hemispherically-shaped weights separated by a flexible insulator for actuating the firing squib upon impact, and a second releasing switch for physically releasing the bomb after the plurality of capacitors have been charged.

3,621,784
OPTICAL SYSTEM FOR AN INFRARED MISSILE FUZE
Lloyd G. Mundie, Ann Arbor, Mich., assignor to the United States of America as represented by the Secretary of the Navy
Filed Dec. 29, 1955, Ser. No. 556,363
Int. Cl. F42c 13/02, 19/00, 13/00
U.S. Cl. 102—70.2 P 9 Claims



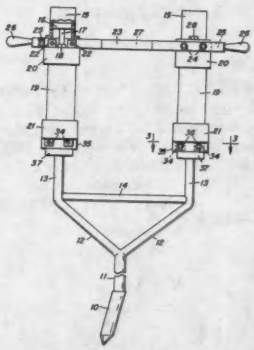
1. An infrared fuze comprising an annular toroidal lens, a pair of annular detectors positioned concentrically with respect to the axis of said lens and on opposite sides of the focal point of said lens, shielding and reflecting means associated with one of said detectors whereby the energy passing through said lens crosses the axis thereof before striking said detector, and electronic means associated with said detectors and adapted to receive successive signals from said detectors during a predetermined interval for actuating a detonation circuit.

3,621,785
BALLAST SPREADER AND COMPACTOR
Joseph G. Fearon and Alan R. Blair, Libby, Mont., assignors to Morrison-Knudsen Company, Inc., Boise, Idaho
Filed Aug. 6, 1970, Ser. No. 61,726
Int. Cl. E01b 27/17, 27/18
U.S. Cl. 104—2 4 Claims



An apparatus for spreading and compacting ballast under railway tracks which utilizes a sled structure with ballast spreading means which is advanced beneath the rails and ties. The sled is followed immediately by a plurality of vibratory tampers or compactors which compact the ballast before the rails and ties are replaced on the ballast layer. The novel method includes the steps of preparing a subgrade or sub-base, laying the ties and rails on the subgrade, depositing ballast along the rails and ties from such means as rail cars, utilizing the apparatus of the present invention to raise the rails and ties and uniformly spread the ballast thereunder while compacting the same before the rails and ties are replaced, tamping additional ballast beneath the rails and ties to bring the railway to a proper elevation alignment and cross level and then dressing the rails and ties with fine ballast.

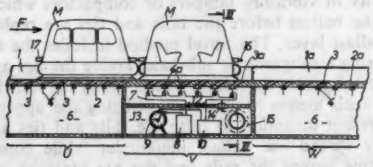
3,621,786
RAILWAY BALLAST TAMPER
Ivan L. Joy, 1616 W. 29th St., Topeka, Kans. 66611
Filed Apr. 22, 1970, Ser. No. 30,701
Int. Cl. E01b 27/16
U.S. Cl. 104—12 14 Claims



A ballast tamper having a tool support operable by a resonant frequency power drive. The direction of the tamping force on the tool is controlled by providing a pair of resonant frequency actuators, each operably connected to a separate force-transmitting branch member of a bifurcated tool mounting structure. The other ends of the branch members are connected together to a common point on the tool support. The relative vibration phase relationship of the power drives is controllably variable through one hundred and eighty degrees whereby the

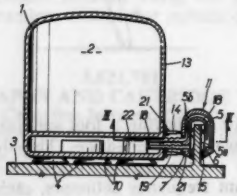
resultant direction of the force on the tool is variable from vibratory vertical movement to vibratory horizontal movement and in passing between these limits can assume an ellipsoidal orbital circumferential movement with the major axis vertical to ellipsoidal movement with the major axis horizontal providing in the intermediate relations forces both horizontal and vertical and variable in both direction and magnitude by variation of the relative power drive phase relationship of the two actuators.

3,621,787
MARSHALLING PROCESS AND DEVICE FOR GROUND EFFECT TRANSPORTATION
François Louis Giraud, Plaisir, France, assignor to Societe de l'Aerotrain, Paris, France
Filed Jan. 28, 1969, Ser. No. 794,651
Claims priority, application France, Mar. 27, 1968, 145,717
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **2 Claims**



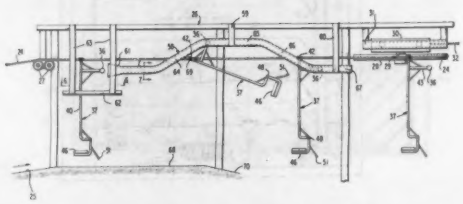
A ground effect transportation system has a marshalling yard by-passing a main line and having a station area which is fluidically activatable by means of valve-controlled pressure fluid jets distributed thereon; a carriage is switched from said main line into said marshalling yard and propelled towards said station area which is first deactivated during a predetermined lapse of time thereby eliminating ground effect thereon and immobilizing said carriage as it overlies the area, then re-activated thereby restoring ground effect and carriage movability thereon; the carriage is thereafter propelled over said marshalling yard and switched into said main line.

3,621,788
GROUND-EFFECT TRANSPORTATION SYSTEM
Jean Henri Bertin, Neuilly-sur-Seine, France, assignor to Bertin & Cie, Plaisir, France
Filed Dec. 11, 1968, Ser. No. 782,968
Claims priority, application France, Apr. 29, 1968, 149,966
Int. Cl. B61b *13/08*
U.S. Cl. 104—23 FS **2 Claims**



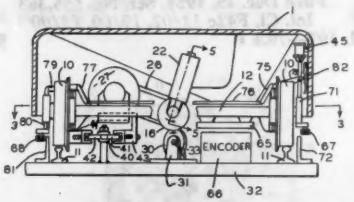
A guiding device for a tracked air cushion vehicle movable over a guideway having a dissymmetrical upward extension laterally offset relatively to the base section of the guideway, said guiding device being carried by the body portion of the vehicle at a laterally offset location and extending astride said extension to engage the opposite faces thereof.

3,621,789
SKI LIFT
David R. Pender, 1018 Marion St., Columbia, S.C. 29201
Filed Oct. 22, 1968, Ser. No. 769,559
Int. Cl. B61b *11/00*
U.S. Cl. 104—173 **12 Claims**



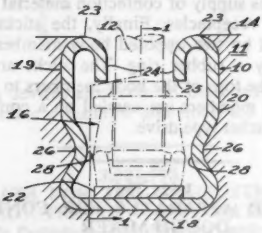
An apparatus for conveying skiers safely to the top of a ski slope characterized by saddle-type seats which are mounted and de-mounted by skiers from the rear while the seats are moving at a relatively fast rate in comparison to conventional equipment, thereby greatly increasing the overall speed and capacity of the lift without decreasing safety. Existing conventional equipment is readily convertible.

3,621,790
RAILWAY PROPULSION SYSTEM
Joseph Wesley Broome, Milwaukee, Wis., assignor to Rex Chainbelt Inc., Milwaukee, Wis.
Filed Aug. 11, 1969, Ser. No. 849,082
Int. Cl. B61b *13/00;* **B61c** *3/00;* **B61d** *15/00*
U.S. Cl. 104—147 **9 Claims**



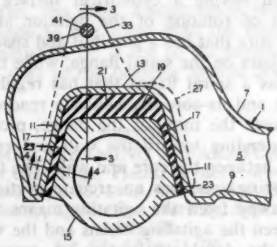
A propulsion system for an individual car of a railway transportation system comprises a rotating drive tube extending longitudinally of and resiliently supported from the chassis of the car in position to cooperate with reaction wheels spaced along the path of the car at intervals less than the length of the drive tube. The drive tube is driven at a generally constant speed so that the speed of the car past any reaction wheel is determined by the angular position of the reaction wheel relative to the drive tube. Some of the reaction wheels are journalled in pivotable mountings to be responsive to external controls for varying the speed of the car past the wheel. Auxiliary power may be supplied directly to a reaction wheel to supplement the power supplied through the drive tube. The reaction wheels may be used in laterally spaced pairs to cradle the drive tube and thus guide the car.

3,621,791
TRACK FOR FLOOR TRUCK DRAGLINE CONVEYORS
Martin Pachuta, Allen Park, Mich., assignor to Jervis B. Webb Company
Filed Jan. 21, 1969, Ser. No. 792,397
Int. Cl. B61b 9/00
U.S. Cl. 104—172 BT 3 Claims



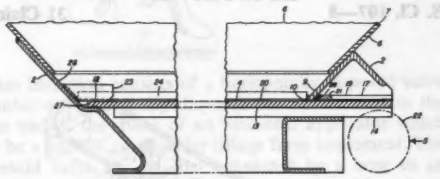
A track member, used for a dragline conveyor propelling tow pin equipped floor trucks, which is of one piece construction, having a U-shaped cross section incorporating a tow pin guide slot, a chain supporting base portion and chain guiding said portions having integrally formed anchoring means which enable the track member to be expeditiously placed in a poured floor. Preferably, the anchoring means are ribs extending longitudinally along the side portions of the track member and projecting inwardly toward the longitudinal center line thereof, the ribs being capable of performing a guiding function on the chain.

3,621,792
RESILIENT JOURNAL BOX MOUNTING
Richard L. Lich, Town and Country, Mo., assignor to General Steel Industries, Inc., St. Louis, Mo.
Filed Mar. 6, 1969, Ser. No. 804,922
Int. Cl. B61f 5/28, 5/30, 5/38
U.S. Cl. 105—224.1 5 Claims



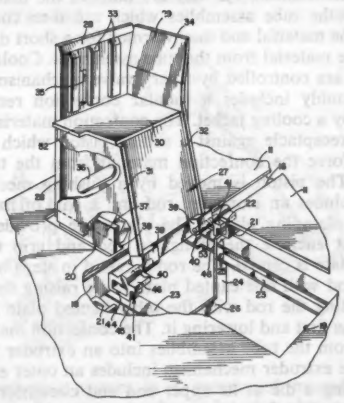
A resilient mounting for a railway truck framing element on a journal box comprising a pedestal jaw having inwardly and upwardly sloping sides and a horizontal top, a journal box having similarly sloping sides and a horizontal top wider in proportion to the height of its sides than the pedestal jaw top, and a molded elastomeric pad of inverted generally U-shape having a relatively thick central top portion positioned between the opposing tops of the journal box and pedestal jaw and thinner inclined end portions positioned between the inwardly sloping opposing sides of the journal box and pedestal jaw, the journal box having outwardly extending peripheral flanges spaced apart a greater transverse distance transversely than the thickness of the jaw, the pad having protruding flanged marginal portions compressed into the intervening spaces between the journal box flanges and the outer and inner surfaces of the framing element whereby to fix the transverse portion of the journal box within the pedestal jaw.

3,621,793
PLASTICALLY AND RESILIENTLY SEALED RAILWAY HOPPER GATE ASSEMBLY
Walter L. Floehr, Toledo, Ohio, assignor to Midland-Ross Corporation, Cleveland, Ohio
Filed Oct. 24, 1969, Ser. No. 869,274
Int. Cl. B61d 7/20, 7/22, 7/26
U.S. Cl. 105—282 A 9 Claims



An otherwise conventional railway hopper car discharge gate assembly modified to transport finely divided lading by fixing to the frame above the gate bendable plates and bars for pressing the gate at sides and rear against its seat and applying plastic cement between the gate and the frame adjacent the gate-receiving opening in the front of the frame.

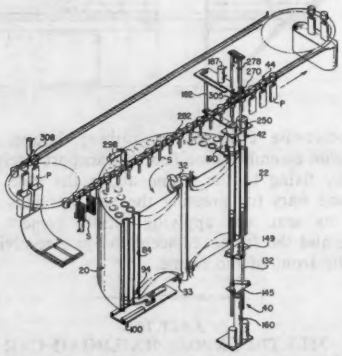
3,621,794
MULTI-PURPOSE RAILROAD CAR
Harold E. Gramse, Chicago Heights, Ill., assignor to Pullman Incorporated, Chicago, Ill.
Filed Apr. 25, 1969, Ser. No. 819,370
Int. Cl. B65l 1/22; B61d 45/00
U.S. Cl. 105—366 D 6 Claims



A railroad flat car readily interchangeable for container and trailer-on-flat-car operations is provided with a container bracket arrangement having a plurality of slots in the deck of the car which permits container brackets to be longitudinally adjusted to various positions on the deck for accommodating different length containers. Apertures are provided which extend transversely of the slots and in which the container brackets are stored when

the car is utilized for trailer operation. The container brackets are provided with engaging elements which are adapted to be engaged with slide blocks for permitting adjustment of the brackets longitudinally within the slots, the engaging elements on the container bracket being disengageable from the slide blocks so that the container bracket may be recessed within an adjacent aperture in a retracted position.

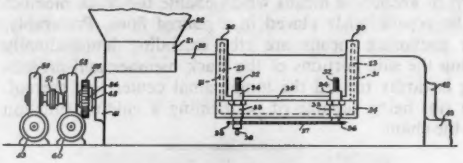
3,621,795
CONFECTION FORMING MACHINE AND METHOD
Kenneth A. Lorz, Oroville, Donald E. Rasmussen, Kennewick, and Forrest C. Smith, Richland, Wash., assignors to Kamino Industries, Incorporated, Yakima, Wash.
Filed Apr. 10, 1969, Ser. No. 815,041
Int. Cl. F25c *7/22*
U.S. Cl. 107—8 **31 Claims**



A machine for extruding form-sustaining products, particularly confection novelties or the like, including a pair of rotary turrets mounted for rotation about parallel axes, each turret having tube assemblies for freezing the confection material. The turrets are indexed by a cam and follower mechanism. As they are indexed the material is placed in the tube assemblies which are then cooled to solidify the material and then warmed for a short duration to free the material from the tube assemblies. Coolant and warmant are controlled by rotary valve mechanism. Each tube assembly includes a tubular confection receptacle covered by a cooling jacket. The confection material is fed into the receptacle against a sliding piston which is also used to force the confection material from the tube assembly. The piston is moved by a pushing mechanism which includes an elongated rod and a pair of fixed and movable clamping plates. The plates are provided with holes that encircle the elongated rod and grip the rod when a plate is canted. The rod is raised in steps by holding the rod with one canted plate while raising the plate, then holding the rod with the other canted plate and releasing the first and lowering it. The confection material is moved from the tube assemblies into an extruder mechanism. The extruder mechanism includes an outer extruder tube having a die at its upper end and circumscribes an inner reservoir tube when in a retracted position. The extruded tube is extended by filling it with confection material from the reservoir tube. A gate closes off the inlet end of the reservoir tube and the extruder is retracted to extrude the confection material through the die onto sticks suspended above the extruding assembly. The sticks are mounted in a plurality of stick-holders carried by a conveyor overlying the rotary turrets.

One method comprises cooling an extruable material to a form-sustaining constituency, placing a stick in position along a predetermined path, moving an extruding orifice along the path and over the stick, extruding the material through the orifice as it is moved along the path over the stick whereby the material is left on the stick as the orifice passes it, and severing the extruded material from the material remaining in the orifice. By arranging the tube assemblies adjacent one another the machine may extrude and fill simultaneously enabling the filling mechanism to feed a continuous supply of confection material into alternate confection receptacles. Finally, the sticks are held in a slot formed by two opposed body members that are held together by a rubber ring. The sticks are released by pressing on the tops of the body members to rock them open. The body members are carried on a conveyor that is moved by a ratchet type drive.

3,621,796
METHOD AND APPARATUS FOR CONTINUOUS DOUGH MIXER
George P. Sternberg, 3740 Wyoming St., Kansas City, Mo. 64111
Filed Aug. 28, 1968, Ser. No. 755,966
Int. Cl. A21c *1/00*
U.S. Cl. 107—30 **18 Claims**

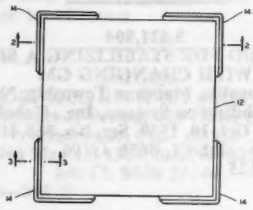


A continuous dough mixer that has a mixing chamber having a tubular wall to which a hopper feeds the dough ingredients at one end and from which an outlet connection discharging developed dough leads from the other end, and an agitator that has lengthwise adjacent pre-mixing and developing sections extending lengthwise in the chamber. Both sections have a core, the core of the pre-mixing section having a cylindrical surface concentric with the axis of rotation of the agitator and a spiral flange on the core that has a gap in it and spaced projecting agitating bars on the spiral flange, while the developing section has a spiral flange that has regularly spaced openings in it and its core has helically spaced thickened portions between the turns of the flange, providing protuberances extending toward the wall and reduced passage portions between the core and wall. The tubular wall at the developing zone has an arcuate portion movable toward and away from the agitating means to vary the spacing between the agitating means and the wall for adjustment of the developing action. A screw conveyor driven and adjustable in speed independently of the agitating means pulls the developed dough out of the developing chamber. Inwardly directed ribs run lengthwise of the pre-mixing and developing chambers along the tubular wall.

3,621,797
LOCATING DEVICE FOR PALLET
Calvin W. Hunter, Battle Creek, Mich., assignor to Clark Equipment Company
Filed Nov. 12, 1969, Ser. No. 875,618
Int. Cl. B65d *19/18*
U.S. Cl. 108—51 **1 Claim**

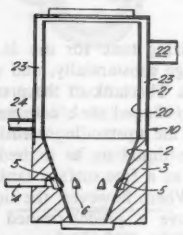
Locating devices are secured to the corner of a rectangular central panel to form a captive pallet. The devices

have an outer angled surface that mates with an angled surface on automatic material handling transport devices.



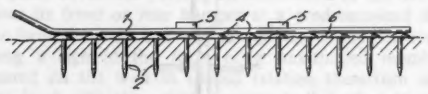
The locating devices also have an inner surface that positions and retains a material unit upon the captive pallet.

3,621,798
FURNACES FOR THE COMBUSTION AND DESTRUCTION OF WASTE MATERIALS
Frode Pedersen, Oslo, Norway, assignor to A. S. Mustads Fabrikker, Oslo, Norway
Filed Sept. 16, 1969, Ser. No. 858,441
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **7 Claims**



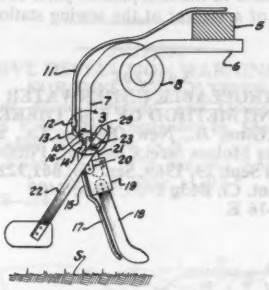
A furnace is disclosed, intended for the combustion and destruction of waste materials, the furnace being provided with an external heat source and a downwardly tapering combustion chamber. The combustion chamber is provided with a separate removable mantle of sheet material supported by the refractory lining of the furnace. The combustion chamber may be extended upwardly by two coaxial mantles, the inner mantle being removable and preferably made in one piece with the tapering mantle portion. Combustion air is fed to the combustion chamber through slots in the tapering mantle portion.

3,621,799
SOIL STEAMING APPARATUS
Tor Olav Erga, Tjotta, Bryne, Norway
Filed Sept. 23, 1969, Ser. No. 860,390
Claims priority, application Norway, Sept. 28, 1968, 3,846/68
Int. Cl. A01g *11/00*
U.S. Cl. 111—6 **1 Claim**



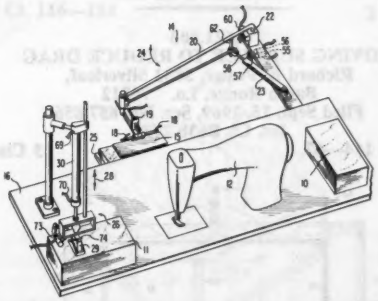
A method for soil steaming comprises penetrating a plastic foil placed on the ground with a plurality of vertical steaming pipes fed by a steam supply pipe, the steaming pipes having caps or hoods at their upper ends, and engaging the plastic foil with the caps or hoods during the steaming to aid in anchoring the foil and to prevent escape of steam.

3,621,800
RELEASE MECHANISM FOR ANHYDROUS AMMONIA APPLICATORS
Arthur J. Rellinger, R.R. 2, Fort Jennings, Ohio 45844
Filed June 30, 1970, Ser. No. 51,076
Int. Cl. A01c *23/02*
U.S. Cl. 111—7 **5 Claims**



This invention consists of a horizontally disposed valve mounted on a vertically disposed bracket secured to the lower end of the shank of an ammonia applicator which may be a harrow or a similar tillage farm implement. The aforesaid valve has its inlet connected by a hose to an ammonia supply tank and its outlet connected by a hose to a tube that extends vertically down the back edge of the knife of the aforesaid applicator or the like. The aforesaid valve is opened and closed by having its plunger activated by the upper and back end of the cover arm of the applicator. The aforesaid cover arm is swingably mounted on a horizontally disposed shaft that extends outwardly from the aforesaid bracket. The aforesaid cover arm is moved whenever its lower end comes in contact or ends contact with the soil over which the aforesaid ammonia applicator is being moved. The opening or closing of the aforesaid valve releases or stops the flow of anhydrous ammonia out of the aforesaid tube, as will hereinafter be described.

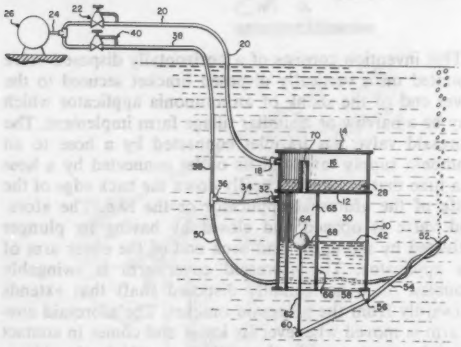
3,621,801
PLY NUMBERING AND SEWING SYSTEM
Erie George Huddleston, Monroe, Ga., assignor to Oxford Industries, Inc., Atlanta, Ga.
Filed June 3, 1970, Ser. No. 42,980
Int. Cl. D05b *1/00*
U.S. Cl. 112—262 **4 Claims**



A numbering system in a process of manufacturing pants or similar garments wherein bunches of pattern parts are delivered from the pattern cutting room to sewing stations in various processing lines, and bunch and ply numbers are applied to the individual pattern parts in the bunches at the first sewing station of each processing line. When the first pattern parts from the first sewing stations are delivered to the second and subsequent sewing stations in each processing line the subsequent pattern parts

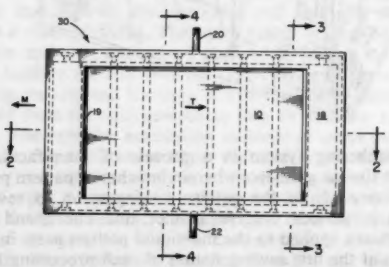
are taken in order directly from their bunches and connected to the previously marked first pattern parts and will thereafter be identified by the bunch and ply numbers carried by the first pattern parts. A stamping mechanism at each first sewing station of the processing lines stamps the bunch and ply numbers on pocket parts, etc., which are attached to the first pattern parts in response to the movement of a stacker at the sewing stations.

3,621,802
DEPTH CONTROLLABLE UNDERWATER APPARATUS AND METHOD OF USE THEREOF
Samuel L. McGinn, Jr., New Orleans, La., assignor to Pittsburgh-Des Moines Steel Company, Pittsburgh, Pa.
Filed Sept. 29, 1969, Ser. No. 861,922
Int. Cl. B63g *8/00*; B63c *7/00*
U.S. Cl. 114—16 E **21 Claims**



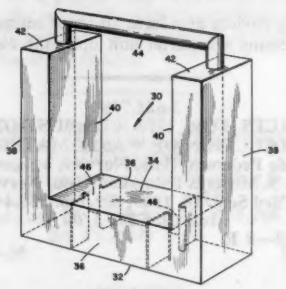
A body means includes a buoyancy chamber and means is provided for selectively controlling the pressure in said buoyancy chamber to adjust the depth of the apparatus. A compensator chamber is open to the surrounding water and receives a variable amount of water therein to form ballast for the body means. Air under pressure is introduced to said compensator chamber and is controlled by a depth sensing means including an open end conduit supported by an arm swingably connected with the body means. The position of the arm is controlled by a float riding within a sensing chamber provided within the body means, such sensing chamber being in communication with the buoyancy chamber.

3,621,803
MOVING SURFACE TO REDUCE DRAG
Richard E. Foster, 5883 Silverleaf, Baton Rouge, La. 70812
Filed Sept. 15, 1969, Ser. No. 857,856
Int. Cl. B63b *1/36*
U.S. Cl. 114—67 **3 Claims**



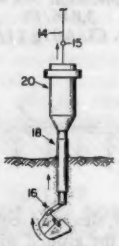
Vehicles (e.g., boats and ships) are equipped with freely movable surfaces contacting the fluid medium through which the vehicles travel. During travel the surfaces move in a direction opposite to the direction of travel.

3,621,804
METHOD FOR STABILIZING A SHIP WITH CHANGING GM
Frans V. A. Pangalila, Matawan Township, N.J., assignor to Flume Stabilization Systems, Inc., Hoboken, N.J.
Filed Oct. 10, 1969, Ser. No. 865,417
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 **2 Claims**



A passive stabilizing tank for use in a vessel whose GM is apt to change substantially, and a method of operating such a tank. The tank of the present invention is in the form of a U-shaped tank with an optional crossover duct bridging the upstanding members of the tank. When filled with a liquid up to a predetermined level, the tank functions as a free-surface tank having a given frequency range. When, however, the liquid level in the tank is raised above a predetermined limit, the tank functions as a U-tube tank having a frequency range substantially less than the frequency range of the free-surface tank. The present invention further relates to a method of stabilizing a ship whose GM is apt to change substantially, comprising adjusting the liquid level in a tank so that the tank functions as either a free-surface tank or as a U-tube tank.

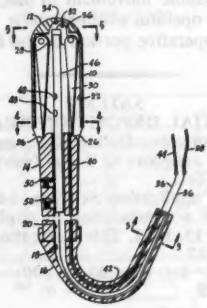
3,621,805
EMBEDMENT ANCHOR
Jasper E. Smith, Ventura, Calif., assignor to the United States of America as represented by the Secretary of the Navy
Filed Feb. 2, 1970, Ser. No. 7,725
Int. Cl. B63b *21/40*
U.S. Cl. 114—208 R **4 Claims**



An anchor of the embedment type having an elongate staff and an articulated soil penetrating tip bearing radially arranged flukes. During soil penetration, the flukes are disposed edgewise to insure minimum resistance to

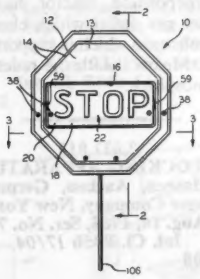
soil penetration. After full penetration a short upward pull on the staff rotates the articulated tip to a position with the flukes disposed cross-wise to gain maximum purchase on the soil. It may be embedded either by free fall impact or by vibration.

3,621,806
ANCHOR WITH RETRACTABLE FLUKES
Robert F. Brown, 400 Cedar St., Clearwater, Fla. 33515
Filed May 16, 1969, Ser. No. 825,155
Int. Cl. B63b *21/44*
U.S. Cl. 114—208 R 8 Claims



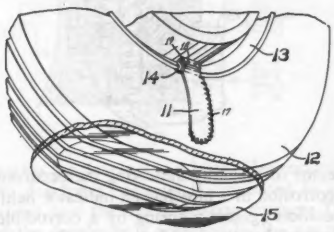
A ship's anchor takes the form of a cylinder with retractable and extendable flukes. The cylinder carries two cables. Application of tension to one cable extends the flukes. Application of tension to the other cable retracts the flukes.

3,621,807
AUTOMOBILE PARKING GUIDE
Chuwan Kang, 2301 Ridgeway Ave., Evanston, Ill. 60201
Filed Nov. 23, 1970, Ser. No. 91,762
Int. Cl. B60q
U.S. Cl. 116—28 8 Claims



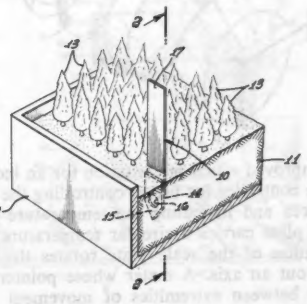
A guide device for parking an automobile or the like to dispose its front or rear bumper at a predetermined distance from the inner end wall of a garage or the like comprising a sign in the form of a hex-shaped member mounted on the wall in spaced relation therefrom and about level with the vehicle operator's line of sight and having a window opening formed in its midportion in which a slat is mounted for swinging movement about a horizontal axis at its midportion, with the slat being balanced such that under the action of gravity, it is disposed substantially edgewise to the plane of the sign. The slat bears the word "stop" on its normally downwardly facing surface, and its other surface is engaged by an arced arm of a feeler member pendantly mounted at the rear of the sign that includes a shank adapted to be engaged by the vehicle bumper such that as the bumper is advanced toward the wall after engaging the feeler member, the slat is tilted into alignment with the plane of the sign to indicate that the desired spacing of the bumper from the wall has been reached.

3,621,808
EXCESSIVE DEFLECTION WARNING DEVICE FOR INFLATABLE TIRES
James Sidles, West Richfield, and Donald R. Bartley, Cuyahoga Falls, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.
Filed Feb. 9, 1970, Ser. No. 9,531
Int. Cl. B60c *23/02*
U.S. Cl. 116—34 9 Claims



A device attachable to an inflated vehicle tire to warn of excessive deflection such as that produced by underinflation, overload, or both. The device comprises an elongated flexible member secured in compact condition to the rim, or to the inflated tire adjacent the rim, with a portion of the supporting means for the member disposed for contact with the road when the tire is operated under conditions of excessive deflection to thereby release the member for extension into striking contact with the road and/or vehicle on which the tire is mounted, thus producing audible warning of the excessive deflection.

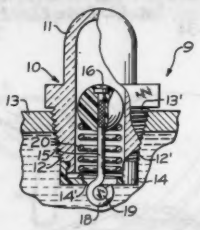
3,621,809
PLANT MARKER
Ted L. Paxton, Riverside, Calif., assignor to International Development Trust, Yakima, Wash.
Filed July 17, 1970, Ser. No. 55,774
Int. Cl. G01d *21/00*
U.S. Cl. 116—114 2 Claims



A plant identifying marker stuck in the soil in nursery flats, trays and pots and transferred with the plants when brought and set out in the customer's garden. The marker has a stiff polystyrene anchor portion for readily penetrating the soil and being buried beneath the surface

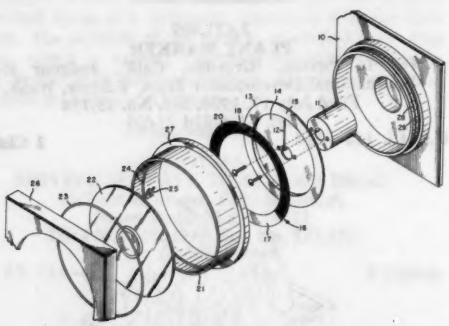
thereof and which is apertured to assist in resisting its removal, and a flexible plant identifying paper upper portion the lower end of which adheres to said anchor portion and which readily yields to pressure thereagainst whereby the buried lower portion remains anchored in the soil and loss of the marker is avoided.

3,621,810
CORROSION DETECTOR
Charles L. Zuck, Jr., Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Nov. 5, 1970, Ser. No. 87,083
Int. Cl. G01k *1/02*
U.S. Cl. 116—114.5 **10 Claims**



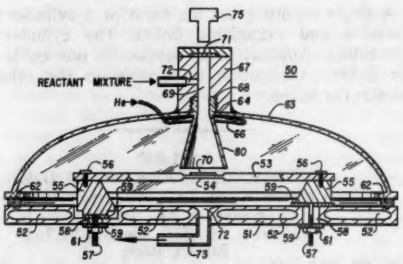
A detector for visually indicating the occurrence of significant corrosion in a pipe has an indicator held in a nonvisible position against a spring by a corrodible member which is exposed to the fluid in the pipe. Corrosive destruction of the corrodible member releases the indicator to a visible position, where it serves as a visual signal that corrective measures are needed.

3,621,811
INDICATING CONDITION CONTROLLER
Lyman L. Hill, Jr., St. Paul, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Feb. 16, 1970, Ser. No. 11,389
Int. Cl. G09f *9/00*
U.S. Cl. 116—129 **5 Claims**



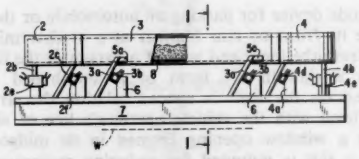
An improved visual presentation for an indicating temperature controller for use in controlling the temperature of an area and indicating the temperature of the area. A scale plate carries a circular temperature scale. Manual rotation of the scale plate rotates the temperature scale about an axis. A meter whose pointer is at a rest position between extremities of movement is energized by the error voltage and has a pointer which rotates about the axis and is capable of swinging through a 250° arc substantially equal to the arc length of the temperature scale. The scale plate is coupled to rotate as the potentiometer wiper moves so that the set point indicator indicates the set point temperature and the pointer position indicates the thermocouple temperature. The rotatable scale face is a disc made of a transparent material having white scale division lines painted onto the scale face and also having a white circular border or band painted around the periphery of the scale face. Within this opaque band the set point indicia numerals are formed by leaving the numerals transparent. The stationary meter face, which is of the same color as the painted band and the scale division lines, has superimposed thereon a 250° dark arcuate mask which contrasts with the white division lines carried by the movable scale face, this arc equaling the movement of the indicating meter, so that as the scale face is adjusted throughout its range, the division lines and numerals which are in the range of the meter pointer movement stand out sharply and those which are out of the range of possible movement of the pointer tend to disappear. The operator's attention is thus constantly directed to the operative portion of the meter face.

3,621,812
EPITAXIAL DEPOSITION REACTOR
George E. Hissong, Jr., Dallas, Tex., and Warren Rice, Tempe, Ariz., assignors to Texas Instruments Incorporated, Dallas, Tex.
Continuation of application Ser. No. 649,427, June 23, 1967, which is a continuation of application Ser. No. 237,161, Nov. 13, 1962. This application June 18, 1969, Ser. No. 838,017
Int. Cl. C23c *11/00*
U.S. Cl. 118—48 **3 Claims**



An epitaxial deposition reactor having a conically divergent, reactant gas outlet which closely overlays and circumscribes a substrate which is supported on a graphite, resistance heater. Means sheath the reaction zone with an inert gaseous atmosphere.

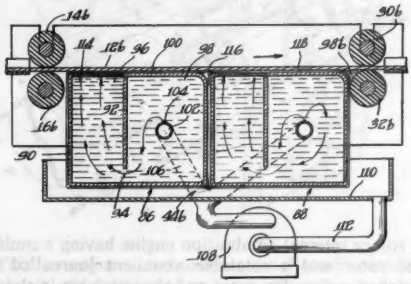
3,621,813
FLOCKING APPARATUS
Josef Zocher, Haaren, Aachen, Germany, assignor to The Singer Company, New York, N.Y.
Filed Aug. 14, 1968, Ser. No. 752,565
Int. Cl. B05b *17/04*
U.S. Cl. 118—308 **3 Claims**



This disclosure relates to apparatus for flocking and more particular to a device for dosing flocking material in an even and controlled manner. The device for dosing the flocking material operates in a manner so that the

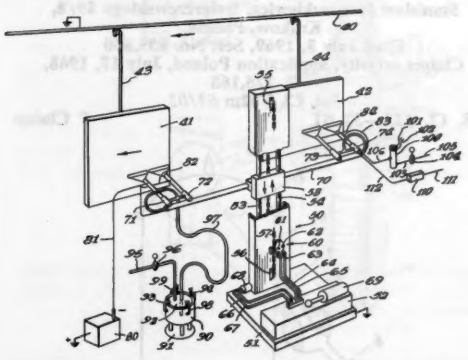
flocking material is dispensed therefrom in a relatively even flow and includes a means for vibrating the dosing device. The combination of the dosing device and the means for vibrating the same provide a novel combination which produces desirable results not obtained with apparatus previously known in the prior art.

3,621,814
COMPACT LIQUID TONER APPARATUS WITH STRAIGHT THROUGH FEED
Meyer L. Sugarman, Northbrook, and Joseph H. Jaeger, Evanston, Ill. (both % Apto/Graphics Inc., 512 Green Bay Road, Kenilworth, Ill. 60043)
Continuation-in-part of application Ser. No. 692,234, Dec. 20, 1967. This application July 11, 1969, Ser. No. 841,097
Int. Cl. B05c *3/00*
U.S. Cl. 118—411 6 Claims



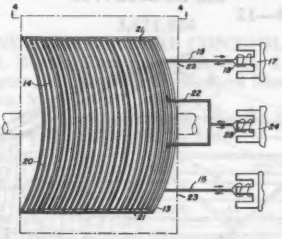
Apparatus for applying a liquid toner only to the surface of the sheet of paper or the like for developing an electrostatic image thereon. The paper is fed in a rectilinear path with the active face thereof down, and the paper floats on a meniscus of liquid toner. In the preferred embodiment the paper is positively spaced from the surface of the toner distributor by a strand of plastic material wound around the distributor.

3,621,815
SPRAY GUN
Arvid C. Walberg, Lombard, Ill., assignor to Graco, Inc., Minneapolis, Minn.
Original application Sept. 16, 1966, Ser. No. 580,468, now Patent No. 3,463,121, dated Aug. 26, 1969. Divided and this application Aug. 22, 1969, Ser. No. 852,253
Int. Cl. B05b *5/02*
U.S. Cl. 118—631 14 Claims



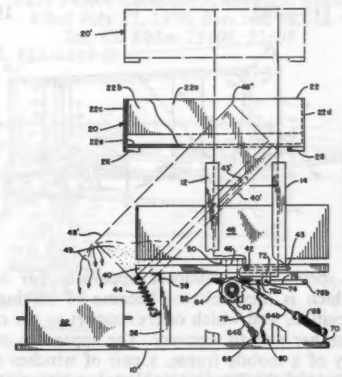
Work is electrostatically coated with highly conductive materials by hydrostatic atomizing spray guns. The rate of material application to work for water base material such as porcelain enamel is high being in excess of three mils of film thickness in less than sixty seconds to prevent "dry spray." The problem of "dry spray" is further controlled by placing the spray guns very close to the work (less than twelve inches).

3,621,816
INTERLACED VIBRATING ELECTRODE
Daniel J. Donalies, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed Oct. 29, 1969, Ser. No. 872,296
Int. Cl. G03g *13/08*
U.S. Cl. 118—637 9 Claims



An apparatus for developing a latent electrostatic image wherein the developer material is circulated in a highly mobile manner past the image bearing surface. The high mobility of the developer is achieved by the use of interlaced vibrating electrode members wherein the relative movement thereof causes developer material to be circulated about an inner electrode means thereby achieving a high degree of circulation of the carrier material in the developer. The high degree of circulation of the carrier particles alleviates the problem of sticking of the carrier material to the image bearing surface and overcomes insufficient leading edge development of solid image areas.

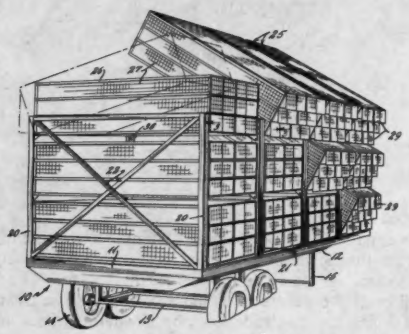
3,621,817
ANIMAL DUMPING LITTER BOX
Philip J. Printz, 221 Oak Terrace, Mount Penn, Pa. 19606
Filed Mar. 23, 1970, Ser. No. 21,839
Int. Cl. A01k *15/00, 29/00*
U.S. Cl. 119—1 4 Claims



Apparatus for supporting an animal, receiving its body waste and dispersing its body waste in litter comprising a base having a superimposed, vertically depressible apertured platform for the animal, a bowl containing litter and positioned beneath the apertured platform so as to

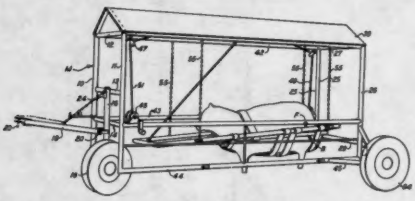
receive the body waste, and means attached to the base and engaging the platform and actuated by the weight of the aaimal for tilting and rotating the bowl, thereby dispersing the body waste in the litter.

3,621,818
DEVICE FOR THE TRANSPORTATION AND QUICK UNLOADING OF POULTRY AND OTHER COMMODITIES
Ambrose G. Johnston, Rte. 2, Box 247A; William W. Bradshaw, Jr., P.O. Box 45; and Guy W. Howard, P.O. Box 12, all of Rose Hill, N.C. 28458
Filed Nov. 20, 1969, Ser. No. 878,471
Int. Cl. B61d *9/00*
U.S. Cl. 119—12 **3 Claims**



The device of the present invention includes a base frame, which may consist merely of side and end members, which are carried in superimposed relation multiple tiers of containers for poultry or other commodities, the containers having their ends provided with closures which can be secured in position or released for the loading and unloading of the same, and being provided also with releasable pivotal supports at both ends so that either end of the containers may be released and elevated for discharging the contents from the opposite ends.

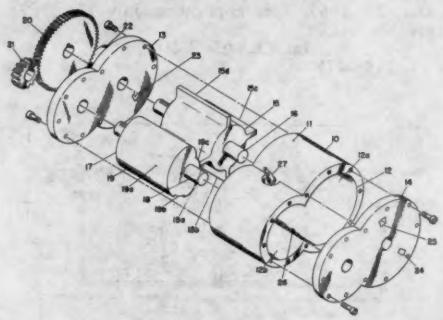
3,621,819
COW WALKER
Pleas J. Hooper, Rte. 2, Hastings, Okla. 73548
Filed July 2, 1970, Ser. No. 51,811
Int. Cl. A61d *3/00*
U.S. Cl. 119—102 **10 Claims**



This specification discloses apparatus for hoisting a cow, which is incapacitated because of calving, into an erect position, and which offers support as the cow walks about on her way to recovery. The apparatus consists essentially of a mobile frame, a pair of winches at the opposite ends of the frame, a cable taken up on each winch and passing over pulleys supported from the frame top with a hook at the free end of each cable. A pair of belly straps are positioned under the cow after the frame is located above her and the hooks are secured to loops at the end of the straps whereupon operation of the winches raises the cow to an erect position.

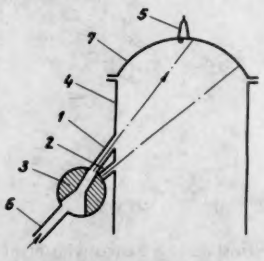
A stretcher like frame is then positioned beneath the cow and the hooks are removed from the belly strap and secured to the opposite ends of the stretcher frame. A breast harness is then mounted over the head end of the cow and secured to the rear end of the mobile frame.

3,621,820
ROTARY INTERNAL COMBUSTION ENGINE
Floyd F. Newsom, Rte. 1, Box 78, Marshfield, Wis. 54449
Filed Jan. 12, 1970, Ser. No. 2,186
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.45 **2 Claims**



A rotary internal combustion engine having a multiple-vaned rotor and a rotatable abutment journalled in a twin-lobed cavity. The rotor and abutment are in slideable sealing engagement with the cavity wall to form a plurality of combustion chambers peripherally about the rotor between the vanes. The combustion chambers are continually sealed from one another by the rotor vanes. A blower and fuel injector supply air and fuel, respectively, to the combustion chambers wherein the resulting mixture is compressed by further rotation of the rotor and then ignited by a sparkplug to produce a force against the leading vane of the chamber in which the ignition occurs to drive the rotor. The cavity may have more than two lobes and more than one rotatable abutment and associated mechanism in order to provide an increased number of firing points per revolution of the rotor and thereby provide power over a greater part of each revolution of the rotor.

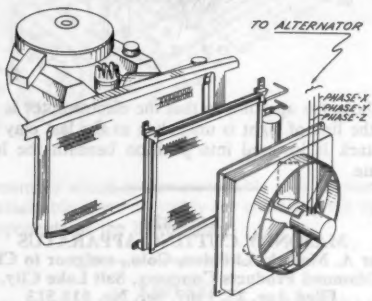
3,621,821
ARRANGEMENT FOR STRATIFYING THE FUEL CHARGE IN SPARK-IGNITION ENGINES
Stanislaw Jarnuszkiewicz, Swierczewskiego 29/8, Krakow, Poland
Filed July 8, 1969, Ser. No. 839,850
Claims priority, application Poland, July 17, 1968, P 128,168
Int. Cl. F02m *63/02*
U.S. Cl. 123—32 ST **7 Claims**



An internal combustion engine has a cylinder, spark plug and fuel injector apparatus which directs fuel near

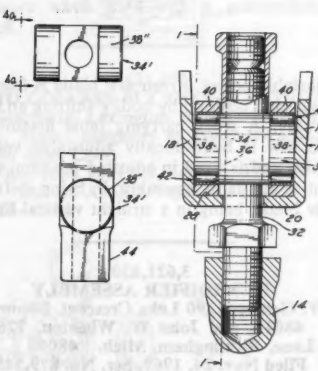
to the spark plug at low loads and further from the spark plug at high loads. In one embodiment, two orifices are provided, one directed near the spark plug and the other further from the spark plug; fuel may be supplied to either or both. In another embodiment, the injector apparatus including a dirigible injector is provided.

3,621,822
INDUCTION MOTOR DRIVEN COOLING FAN
Thomas H. Oster, Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed May 20, 1970, Ser. No. 39,054
Int. Cl. F01p *5/02, 5/04, 7/08*
U.S. Cl. 123—41.12 **1 Claim**



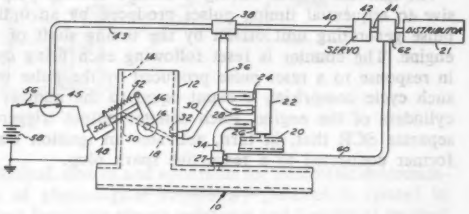
This invention relates to an internal combustion engine system in which the cooling fan is driven by an induction electric motor rather than mechanically by the engine. This induction motor is a poly phase induction motor and is driven by direct electrical connection to the alternator which normally supplies electric power to vehicular components. The induction motor includes squirrel cage rotor conductors mounted on the rotor and deeply buried in the rotor to enhance the reactivity of the motor at high slips.

3,621,823
FRICTIONLESS ROCKER ARM FULCRUM ASSEMBLY
John Lombardi, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 27, 1969, Ser. No. 853,349
Int. Cl. F01l *1/18*
U.S. Cl. 123—90.42 **2 Claims**



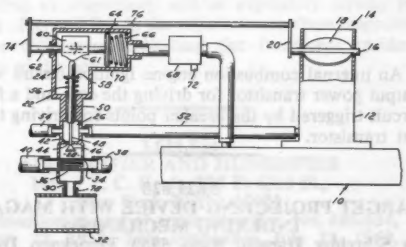
A one-piece rocker arm with straight side walls and a semi-cylinder bottom bearing surface is mounted on a fulcrum having cylindrical stub shafts on which are mounted needle bearings and bearing housings; the rocker arm bearing surface has a no-lash engagement with the bottom portion of the bearing housing which rotates with the rocker arm as a unit during a loaded condition of the valve train but rotates relative to the rocker arm during the unloaded valve train condition due to vibrations of the engine and inertia of the parts to provide even wear of the parts. The fulcrum is provided with an integral sleeve shaft of rectangular or square cross-section which extends through the rocker arm bearing surface and into a slotted recess or groove in the engine cylinder head. A bolt which passes axially through the sleeve shaft secures the fulcrum to the cylinder head.

3,621,824
ENGINE TEMPERATURE CONTROL SYSTEM
Donald M. Burnia, Pontiac, and Alastair S. MacLennan, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed May 4, 1970, Ser. No. 34,219
Int. Cl. F02p *5/08*
U.S. Cl. 123—117 A **4 Claims**



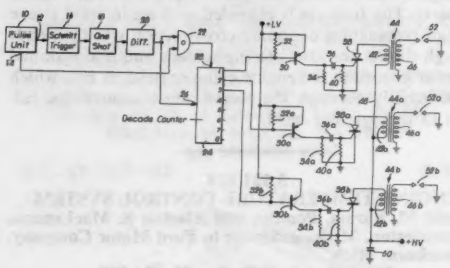
A temperature responsive mechanism that applies intake manifold pressure to an ignition timing mechanism whenever engine temperature exceeds normal operating range interrupts an electrical circuit that deactivates a throttle positioning solenoid. The deactivated solenoid permits the throttle blade to move to a more closed position and thereby reduces engine idling overspeed resulting from the increased timing advance.

3,621,825
EXHAUST GAS RECIRCULATION CONTROL VALVE
William K. Ojala, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed July 27, 1970, Ser. No. 58,511
Int. Cl. F02m *25/06, 31/08*
U.S. Cl. 123—119 R **8 Claims**



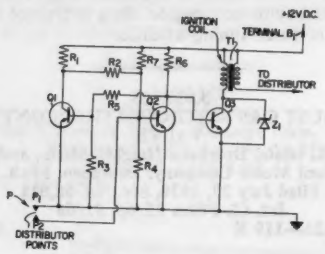
Exhaust gases of an internal combustion engine are inducted back into the intake manifold in quantities controlled by an integral valve mechanism responsive to throttle blade opening and intake manifold pressure. A heat exchanger built into the valve mechanism reduces the temperature of the recirculating exhaust gases to provide further reductions in oxides of nitrogen.

3,621,826
PULSE COUNTER IGNITION SYSTEM
Gene L. Chrestensen, 3325 Sergeant, Joplin, Mo. 64801
Filed Jan. 15, 1970, Ser. No. 3,010
Int. Cl. F02p *3/02, 1/00*
U.S. Cl. 123—148 E **5 Claims**



An ignition system having a decade counter responsive to sequential timing pulses produced by an optical pulse generating unit driven by the timing shaft of the engine. The counter is reset following each firing cycle in response to a reset pulse produced by the pulse unit, such cycle comprising a count equal to the number of cylinders of the engine. Each counter output triggers a separate SCR that, in turn, activates an ignition transformer connected to a respective spark plug.

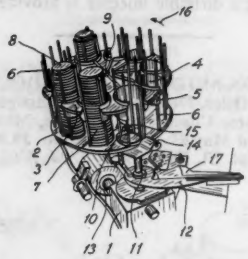
3,621,827
ELECTRONIC AUTOMOBILE IGNITION CIRCUIT
Arnold Milrot, 30 Grand Ravine Road, Suite 3, Downsview, Ontario, Canada
Filed Oct. 14, 1969, Ser. No. 866,315
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 E **4 Claims**



An internal combustion engine ignition circuit with an output power transistor for driving the coil, and a flip-flop circuit triggered by the breaker points for driving the output transistor.

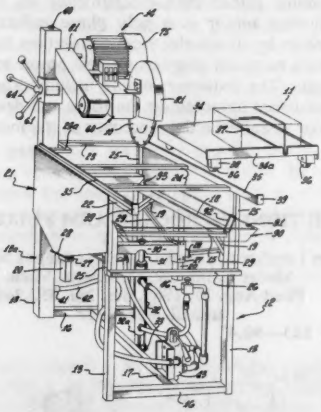
3,621,828
TARGET PROJECTING DEVICE WITH MAGAZINE INDEXING MECHANISM
Ib Schreiner Hansen, Aaso 5953 Tranekaer, Denmark
Filed Jan. 27, 1969, Ser. No. 801,221
Claims priority, application Sweden, Oct. 21, 1968, 14,220/68
Int. Cl. F41b *7/00*
U.S. Cl. 124—8 **2 Claims**

A target trap with a revolvable magazine has a plurality of circularly arranged stacks of clay pigeons which can be successively brought into position above an aperture provided in a plate supporting the stacks and hence down upon the throwing arm of the trap, the magazine being revolved in stages by means of an electromotor controlled by photocell means mounted with the line of



sight above the aperture so that the electromotor is started when the line of sight is unbroken as the last clay pigeon of a stack is lowered into position beneath the level of the plate.

3,621,829
MASONRY CUTTING APPARATUS
Werner A. Maluck, Littleton, Colo., assignor to Christensen Diamond Products Company, Salt Lake City, Utah
Filed Apr. 23, 1969, Ser. No. 818,513
Int. Cl. B28d *1/04*
U.S. Cl. 125—13 R **15 Claims**

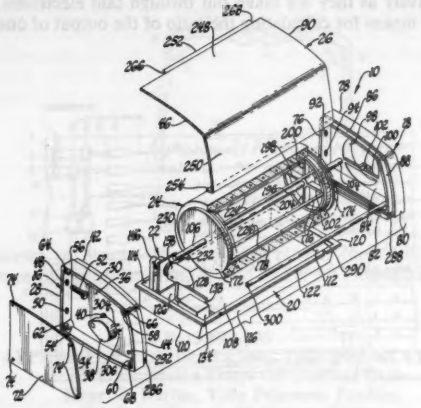


An adjustable power driven saw blade is fixed for rotation in a selected position by bodily shifting an entire rigid saw assembly. A work carrying table assembly located below the saw is hydraulically adjustable vertically between limits, and is fixed in adjusted position, the vertical movement of the table assembly, in being shifted relative to the saw blade, being in a straight vertical line.

3,621,830
HUMIDIFIER ASSEMBLY
Russell W. Geisler, 1290 Lake Crescent, Bloomfield Hills, Mich. 48013, and John W. Wheaton, 7264 Heather Heath Lane, Birmingham, Mich. 48010
Filed Nov. 24, 1969, Ser. No. 879,145
Int. Cl. F24f *3/14*
U.S. Cl. 126—113 **8 Claims**

A humidifier assembly for use with a related hot air heating system has separate end support members individually mountable, in spaced relation, to a portion of

the heating system; the end supports in turn support a separate lower water pan, a water carrying rotatable



drum assembly which is also removable as a subassembly and a detachable cover assembly for enclosing the operating components of the humidifier.

3,621,831

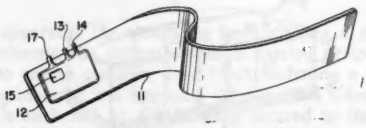
INFLATABLE BLADDER WITH SELF-CONTAINED FLEXIBLE LISTENING DEVICE FOR THE SOLE PURPOSE OF MEASURING BLOOD PRESSURE

John C. Pisacano, 1 Bunker Road, Lido Beach, N.Y. 11561

Substituted for abandoned application Ser. No. 288,718, June 18, 1963. This application Sept. 4, 1969, Ser. No. 871,388

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 C **5 Claims**



An inflatable bladder with one wall of the bladder having a recess therein defined by a flexible peripheral wall disposed within the confines of the bladder and including a tube for communication with a listening device such as a stethoscope for the sole purpose of measuring blood pressure when used with a conventional blood pressure cuff.

3,621,832

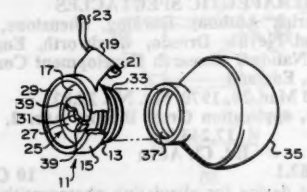
FLUID COLUMN SUCTION ELECTRODE

James T. Fearnside, Lexington, and Kenneth M. Patton, Wayland, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sept. 18, 1969, Ser. No. 859,119

Int. Cl. A61b *5/04;* **A61n** *1/00*

U.S. Cl. 128—2.06 **5 Claims**



An electrode structure provides an electrically conducting fluid column interface between a patient and a cardiac signal receiving cable. A suction bulb draws a vacuum in the fluid column when in contact with a patient to thereby removably secure the electrode to the patient.

3,621,833

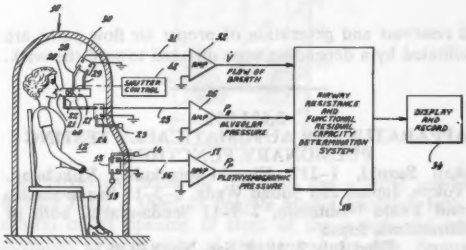
METHOD AND APPARATUS FOR AUTOMATICALLY DETERMINING PHYSIOLOGICAL PARAMETERS RELATED TO HUMAN BREATHING AIRWAY RESISTANCE AND FUNCTIONAL RESIDUAL CAPACITY

Robert Crane, 21 Cynthia Lane, Plainview, N.Y. 11803

Filed June 26, 1969, Ser. No. 836,781

Int. Cl. A61b *5/08*

U.S. Cl. 128—2.08 **14 Claims**



Method, system and apparatus for automatic determination of physiological respiratory parameters related to human breathing airway resistance and functional residual capacity are disclosed. The person for whom the determinations are being made is seated within a whole body plethysmograph (closed cabinet) and breathes air which is located therein with him in a sequence of short rapid breaths known as panting, the pressure within the plethysmograph (P_p) relative to atmosphere being sensed after a predetermined number of breaths at respective points corresponding to predetermined respective breathing air flow rates ($\dot{V}$) (both inspiratory and expiratory points may be used). The difference in plethysmograph pressure (ΔP_p) at these respective points is determined, which is proportional to changes in "body volume." The breathing flow path is thereafter obstructed by a closed shutter, and the pressure in this obstructed flow path (P_A) relative to atmosphere is sensed at respective points when the pressure in the plethysmograph corresponds to that occurring at the predetermined flow rates. The difference in pressure (ΔP_A) in the obstructed flow path at the latter respective points is determined, this difference corresponding to inspiratory and/or expiratory airway resistance (R_{AI} and R_{AE}), the ratio between these respective pressure differences indicating the functional residual capacity of the person.

3,621,834

AIR PURIFIER AND HUMIDIFIER

Henry P. C. Keuls, 205 E. 63rd St., New York, N.Y. 10021

Continuation-in-part of application Ser. No. 685,034, Nov. 22, 1967. This application July 23, 1969, Ser. No. 843,986

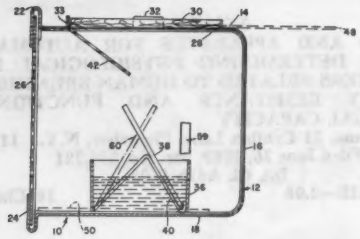
The portion of the term of the patent subsequent to Sept. 2, 1986, has been disclaimed

Int. Cl. B01d *45/10*

U.S. Cl. 55—234 **4 Claims**

A window-mounted air purifier and humidifier comprising a housing having an inlet for external air covered by an insect excluding, non-dirt-filtering screen and

an air outlet covered by an air filter. Incoming air impinges upon an air scrubber or wick mounted in a liquid reservoir and generation of proper air flow paths are facilitated by a depending vane directed toward the wick.

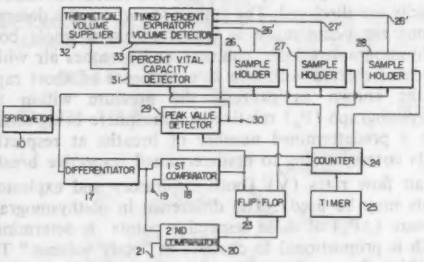


3,621,835

APPARATUS FOR AUTOMATICALLY TESTING PULMONARY FUNCTIONS

Takaji Suzuki, 1–217 Higashi-koigakubo, Kokubanji, Tokyo, Japan; and Sunao Wada, 2–3–11 Senda-machi; and Yukio Nishimoto, 2–9–11 Senda-machi, both of Hiroshima, Japan

Filed July 7, 1969, Ser. No. 839,487
Claims priority, application Japan, July 8, 1968, 43/47,107
Int. Cl. A61b *5/08*
U.S. Cl. 128—2.08 18 Claims



Apparatus for testing pulmonary functions which automatically measures vital capacity, measures volumes of air expired at predetermined intervals, compares vital capacity with a theoretical value, and compares vital capacity with expiratory volumes at different times, with electrical circuitry for providing start and end point detecting means, vital capacity detecting means, timed expiratory volume detecting means, time detecting means and ratio computing means.

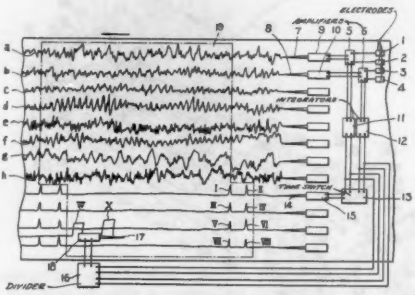
3,621,836

METHOD OF AND APPARATUS FOR MEASURING AND RECORDING THE RATE OF SLOW BRAIN WAVES

Kotaro Nagatomi, 20–19, 2-chome, Taishido, Setagaya-ku, Tokyo, Japan

Filed Apr. 6, 1970, Ser. No. 25,821
Claims priority, application Japan, Apr. 10, 1969, 44/27,250
Int. Cl. A61b *5/05*
U.S. Cl. 128—2.1 B 4 Claims

A method of and an apparatus for measuring and recording the rate of slow brain waves comprising at least a pair of electrodes to be mounted on the head of a person to be examined, integrator means for integrating the slow brain waves and all the brain waves respectively as they are taken out through said electrodes, divider means for calculating the ratio of the output of one integrator means to the output of the other integrator means, and a mechanism for recording and indicating the result of calculation in conformity with the output of said divider means.

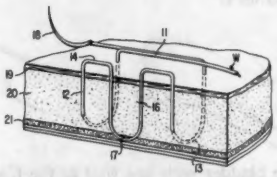


3,621,837

METHOD OF IMPLANTING HAIRPIECE ANCHOR

Bernard C. Gindes, 8920 W. Olympic Blvd., Beverly Hills, Calif. 90211

Continuation-in-part of application Ser. No. 9,748, Feb. 9, 1970. This application July 23, 1970, Ser. No. 57,453
Int. Cl. A61b *17/00;* A61f *1/00*
U.S. Cl. 128—330 2 Claims



A length of Teflon coated stainless steel surgical suture wire is sewn into the scalp and brought through the aponeurosis layer thereof at locations constituting the corners of a triangle. Portions of the wire are trained above the skin and provide anchorage for a hairpiece attached thereto. The leading and trailing end portions of the wire protrude above the skin and are welded together, thus making the suture wire a closed loop of irregular formation permanently implanted in the scalp.

3,621,838

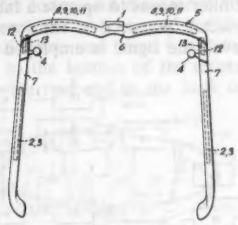
THERAPEUTIC SPECTACLES

Graham Frederick Anthony Harding, Shenstone, near Lichfield, and Neville Drasdo, Curdworth, England, assignors to National Research Development Corporation, London, England

Filed Mar. 26, 1970, Ser. No. 22,821
Claims priority, application Great Britain, Apr. 2, 1969, 17,243/69
Int. Cl. A61n
U.S. Cl. 128—82.1 10 Claims

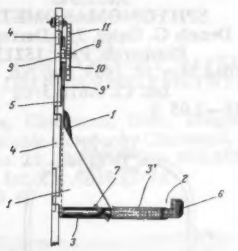
A therapeutic device for alleviating photosensitive epilepsy comprises a pair of spectacles or the like in combination with means for detecting flickering illuminations

in the adjacent environment at a predetermined frequency to which the intended wearer is sensitive, and a secondary



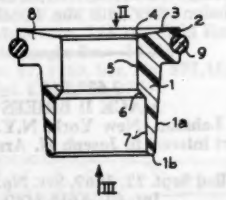
source of steady illumination arranged for energisation in response to detection of said flickering illuminations.

3,621,839
APPARATUS CONTROLLING THE RELAXATION AND ELONGATION OF THE SPINE
Henri P. Barthe, Villa Princesse Pauline, Bd. Reine Jeanne, 06 Grasse, France
Filed Dec. 12, 1969, Ser. No. 884,607
Claims priority, application France, Oct. 14, 1969, 6935778
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **2 Claims**



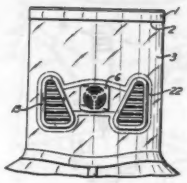
An apparatus for elongating and relaxing a patient's spine wherein the patient's head is carried peripherally, so as to ensure comfort, by a block including a coat of yielding material and engaging the nape and sides of the patient's neck and by a chin strap secured to the block by lateral telescopic tubes. The elongating operation is ensured by a lever pivotally secured to the upright along which the block is adapted to slide so as to exert a vertical stress on the head support constituted by the block and chin strap.

3,621,840
DEVICE FOR USE AS A REMEDY AGAINST MALE IMPOTENCE
Pietro Aurelio Macchioni, Corso San Martino 8, Turin, Italy
Filed July 29, 1969, Ser. No. 845,827
Claims priority, application Italy, July 29, 1968, 52,626/68
Int. Cl. A61f *5/00*
U.S. Cl. 128—79 **7 Claims**



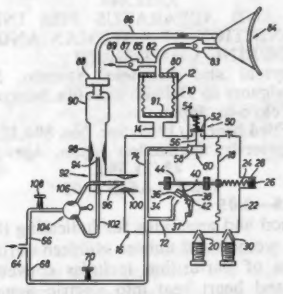
A device for use as a remedy against male impotence has a tubular elastic element which fits around the base of the penis of a user. The bore of the element has a diameter (or mean diameter if elliptical) corresponding to the mean diameter of the penis in a non-erect state, at least over a portion of the bore adjoining the end of the element which faces the body of the user.

3,621,841
FOLDABLE PROTECTIVE HEAD ENCLOSURE
Harry W. Austin, Monroeville, John C. Miller, Pittsburgh, Rutherford B. Snyder, Jr., Bradford Woods, and John W. Neidhart, Monroeville, Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.
Filed May 14, 1970, Ser. No. 37,135
Int. Cl. A62b *17/04*
U.S. Cl. 128—142.7 **6 Claims**



A protective hood for the head has a front window formed from a sheet of flexible plastic provided with a central outlet opening in front of the mouth and inlet openings at each side of the central opening. Secured to the window is an outlet valve surrounded by a breathing tube that extends rearwardly for insertion in the mouth. Each inlet opening is closed by a filter, and a cover has an upright body spaced behind the filters and valve and also has forwardly extending walls sealed to the inner surface of the window around the openings as a group. This cover body is provided with an opening through which the breathing tube extends, and the tube has a lateral inlet opening between the cover body and the window for establishing communication between the inside of the tube and the air duct formed by the cover. At opposite sides of the tube opening in the cover it has hinged portions to permit the cover and window to be folded rearwardly on opposite sides of the breathing tube when not in use.

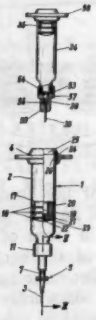
3,621,842
VENTILATING MACHINE
Roger E. W. Manley, Chesham, England, assignor to Blease Medical Equipment Limited, Deansway, Chesham, England
Filed July 3, 1969, Ser. No. 838,996
Claims priority, application Great Britain, July 5, 1969, 32,259/69
Int. Cl. A61m *16/00*
U.S. Cl. 128—145.6 **9 Claims**



A ventilation machine particularly for surgical use allows a full facility for adjustment of inhalation and exhalation duration and pressure. The machine is actuated

by an over-centre toggle mechanism responsive to the volume of a control chamber. The latter is connected to a chamber containing a bag from which gas is forced to the user.

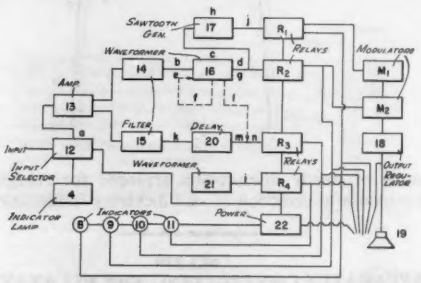
3,621,843
SYRINGE
Theo Metten, 1 Kaule, 506 Bensberg-Immekeppel, Germany
Filed Apr. 15, 1969, Ser. No. 816,327
Claims priority, application Germany, Apr. 20, 1968, P 17 66 222.5
Int. Cl. A61m 5/18
U.S. Cl. 128—218 M **7 Claims**



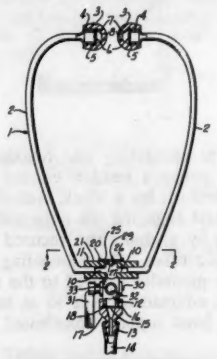
There is disclosed a syringe for injecting a solution of a dry substance and a solvent, including a syringe barrel carrying the injection needle, said barrel containing the dry substance, and a piston shiftably mounted in the barrel and closing the syringe barrel above the dry substance, wherein the injection needle is carried by the syringe barrel axially shiftable between two settings, a resilient seal is disposed between the barrel side and of the injection needle and the syringe barrel shutting same off, said seal being punctured by the needle upon shifting thereof into a limit position, and the syringe piston consists of a resilient material and has a recess with female threads at the end facing away from the injection needle into which threads a plunger serving to shift the syringe piston is capable of being screwed-in which carries a hollow needle puncturing through the syringe piston in the completely screw-in location, the other end of said needle being capable of being connected with an ampoule containing the solvent the solvent thereby being passed to the dry substance upon retracting the syringe piston in the syringe barrel.

3,621,844
METHOD AND APPARATUS FOR INDICATING THE CONDITION OF A WOMAN AND UNBORN CHILD DURING CHILDBIRTH
Yoshio Hayashi and Kimitaka Sawano, Sapporo-shi, Japan, assignors to Daiichi Yakuhin Sangyo Kabushiki Kaisha, Tokyo-to, Japan
Filed Mar. 4, 1969, Ser. No. 804,125
Claims priority, application Japan, Apr. 2, 1968, 43/21,580
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 R **7 Claims**

The method and apparatus for indicating the condition of pregnant women and unborn children during each successive stage of parturition includes converting a fetal heart tone and heart beat into electric signals having a frequency and amplitude indicative thereof and sensing the electric potential of the signals to determine whether the potential is above or below a desired level. A filter unit is employed to eliminate noise signals occurring at the onset of labor pains from the signal from which the potential level is sensed, and these noise signals are fed to a second filter means to operate a labor pain indicator. When the electric potential of the sensed signal is below a desired level, the signal is employed to operate a normal condition indicator which includes both visual and audio indication means, while signals above a desired potential level are employed to operate an abnormal visual condition indicator as well as the audio indication means.



3,621,845
SPHYGMOMANOMETER
Dennis G. Oates, 250 Darragh St., Pittsburgh, Pa. 15213
Filed May 14, 1969, Ser. No. 824,593
Int. Cl. A61b 5/02
U.S. Cl. 128—2.05 S **13 Claims**

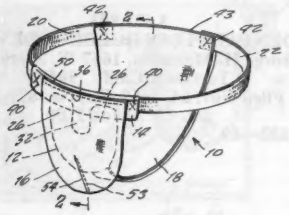


A sphygmomanometer having a constriction blood pressure cuff with an inflatable portion having a built-in stethoscope audio pickup. A single transmission duct or tube is cooperatively connected to the inflatable portion of the cuff and the stethoscope audio pickup such that pneumatic pressure may be supplied to the inflatable interior of the cuff through the transmission duct while at the same time sound is transmitted from the audio pickup through the same transmission duct to the ear of an operator. A housing is also provided to automatically retract the transmission duct into the housing for convenient storage.

3,621,846
MACK II BRIEFS
Charles C. Lehman, New York, N.Y., assignor of fractional part interest to Joseph H. Arsenault, New York, N.Y.
Filed Sept. 22, 1969, Ser. No. 859,999
Int. Cl. A61f 5/40
U.S. Cl. 128—159 **10 Claims**

A male undergarment of the "brief" type having a fabric scrotum support pouch secured to and suspended from a

waist band, the pouch having an opening through which the penis extends and a free falling flap partly of pouch-like formation at its lower end disposed in front of the scrotum support pouch and also secured to the waist band. A triangular shaped fabric seat panel is secured at its forward smaller end to the bottom of the scrotum support pouch and at its wide rear end to the back of the waist



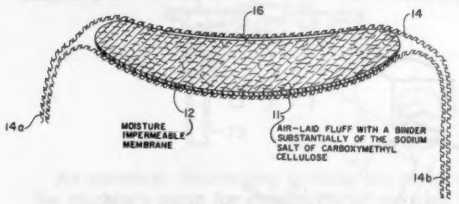
band. The waist band is formed of side elastic sections secured at their forward ends to the ends of a front central fabric waist band section which carries the scrotum support pouch and the forward free falling flap, the rear ends of the side elastic sections being secured to the corner end portions at the wide rear base of the triangular fabric seat panel which passes between the thighs of the wearer to lie against the buttocks of the wearer.

3,621,847

ARCUATE CORE FOR SANITARY NAPKINS WITH A WATER SOLUBLE CARBOXYMETHYL CELLULOSE BINDER

John P. Roberson, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 20, 1967, Ser. No. 692,055
Int. Cl. A61f *13/18*
U.S. Cl. 128—290 R **1 Claim**



A sanitary napkin having an arcuately configured core containing a water-soluble binder distributed uniformly throughout. The binder consists essentially of the sodium salt of carboxymethylcellulose having a Degree of Substitution of at least 0.4 and being present in specified ranges in accordance with the weight of the core. The binder has a medium to high viscosity such that when dissolved in water to form a 1% solution at 75° F., the viscosity of the solution will be in the range of from about 25 to about 2000 cp.

3,621,848

SURGICAL DRAINAGE TUBE HAVING REMOVABLE LINERS

George J. Magovern, 715 Delafield Road, Pittsburgh, Pa. 15215

Filed Nov. 17, 1969, Ser. No. 877,112
Int. Cl. A61m *27/00*
U.S. Cl. 128—350 R **1 Claim**

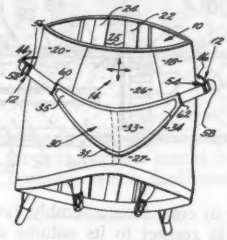
A surgical drainage tube has a tubular outer wall and a tubular lining frictionally engaging the inner surface of that wall. If the tube becomes obstructed by blood clots inside the lining, the lining tube can be pulled out of one end of the tubular outer wall to remove the clots.

3,621,849

THERAPEUTIC GARMENT FOR MATERNITY USE

Marguerite R. Williams, Trumbull, Conn., assignor to Surgical Appliance Industries, Inc., Cincinnati, Ohio

Filed Oct. 13, 1969, Ser. No. 865,887
Int. Cl. A41c *1/08*
U.S. Cl. 128—579 **3 Claims**



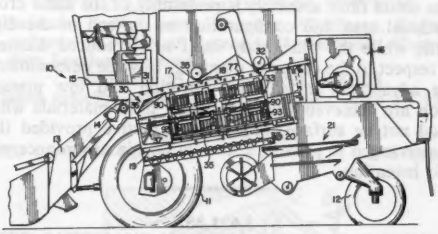
A therapeutic garment for maternity use including contiguous front, rear, and opposite left and right side panels adapted in use to encircle the trunk of a pregnant user having a distended or enlarged abdominal region; an elastic support panel secured to and overlying the front panel and having tapered ends terminating adjacent the right and left side panels; right and left triangular anchor panels having their respective base edges vertically disposed and secured to the back panel and their opposite free ends or apexes terminating adjacent the left and right side panels at a point higher than the ends of the anchor and support panels, whereby a maternity garment is provided which without structural modification comfortably accommodates users having wide, narrow, high or low hips, does not bind or cut the user when worn, provides a smooth, unrumpled or ungathered appearance, and provides adequate abdominal support throughout all stages of pregnancy.

3,621,850

CONVERTIBLE ROTOR

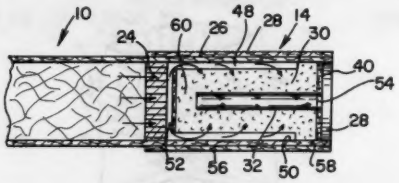
William H. Knapp, Davenport, Iowa, and Richard L. Wood, El Dorado Springs, Mo., assignors to International Harvester Company, Chicago, Ill.

Filed Jan. 6, 1970, Ser. No. 995
Int. Cl. A01f *12/22*
U.S. Cl. 130—27 R **16 Claims**



A rotor for an axial flow combine having spike teeth protruding from its outer periphery and adjustable spike teeth covers that can be positioned to cover a selected portion of the spike teeth to thus change the threshing characteristic of the rotor. The spike teeth covers are divided lengthwise of the rotor so that one end of the rotor can be adjusted to be less aggressive than the other.

3,621,851
FILTER FOR SMOKER'S ARTICLE
Donald E. Heskett, Villa Park, and John B. Heskett, Lombard, Ill., assignors to Kata Manufacturing & Filtering Co.
Continuation-in-part of applications Ser. No. 490,802, Sept. 28, 1965, and Ser. No. 581,507, Sept. 23, 1966. This application Nov. 26, 1969, Ser. No. 880,109
The portion of the term of the patent subsequent to Nov. 3, 1987, has been disclaimed
Int. Cl. A24b *15/02*; A24d *1/06*; A24f *1/08*
U.S. Cl. 131—10.5 30 Claims

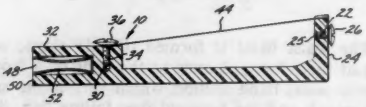


A cigarette or cigar filter assembly having a large entry surface area in respect to its volume and characterized by low pressure drop, high effectiveness, and a simple configuration which is adapted to economical mass production. The body of the filter assembly is made from a bed of filter material, preferably aggregate particles which are bound by a minor proportion of resinous binder material into a fixed relation to one another. The body, in spite of having significant structural rigidity, and a density substantially equal to the density of the active aggregate material alone in its loose bed or uncompacted form, characterized by a low pressure drop thereacross, and the aggregate material, in a preferred embodiment, is bound so as to have substantially none of its activity impaired by the binder. Smoke flow through the axial ends of the filter body itself is blocked off so that smoke enters the filter body around the large entry surface presented by the outer surface of the filter body, passes radially through the filter body, and is drawn through the opening lying at one end of the core and facing to the rear of the body. Preferably, the filter assembly comprises an outer cylinder forming the mouthpiece and an inner filter body in the form of a hollow body. An annular smoke chamber is defined between the outer surface of the body, the entry portion of the body, and inner surface of the mouthpiece, and the center or core of the body opens to the rear of the body. The method of manufacture of the filter body is easily adapted to extrusion or like continuous manufacture, as well as batch method manufacure. Preferred filter materials include activated charcoal and ion exchange resins in finely divided form. The entire filter assembly is preferably of the same cross-sectional area and configuration as the end of the cigarette, while the filter body itself is of reduced diameter in respect to the cigarette diameter. In some embodiments, the advantages of effective filtration and low pressure drop are achieved with the use of filter materials which need not be surface, or otherwise, active provided they are arranged to provide a flow pattern in accordance with this invention.

3,621,852
METHOD OF PERMANENTLY CHANGING CONFIGURATION OF MODACRYLIC HAIR
Hyman Henkin, Glencoe, and Norman L. Edelberg, Des Plaines, Ill., assignors to Helene Curtis Industries, Inc., Chicago, Ill.
No Drawing. Filed July 11, 1969, Ser. No. 841,131
Int. Cl. A45d *44/00*
U.S. Cl. 132—1 R 8 Claims

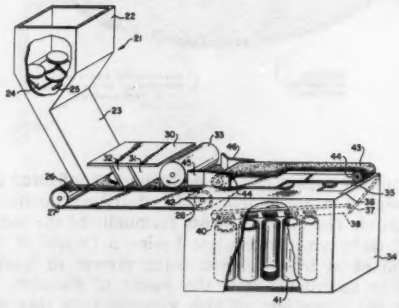
Synthetic modacrylic hair dimensionally stable at temperatures at least as high as 212° F., in the form of wigs, are given a permanent deformation without change of luster condition by shaping the hair to the desired form and heating in the range 120° to 170° F. in contact with water for five to thirty minutes, followed by cooling and drying. This method makes practical the home or beauty shop permanent restyling of wigs.

3,621,853
DENTAL FLOSS HOLDING DEVICE
George H. Montalbo, 1667 W. 208th St. 3, Torrance, Calif. 90501
Filed Nov. 24, 1969, Ser. No. 879,300
Int. Cl. A61c *15/00*
U.S. Cl. 132—89 6 Claims



A device including an elongate handle adapted to be gripped manually by a user or mounted on the reciprocating portion of a power-driven toothbrush whereby a taut length of dental floss may be removably supported therein and used for dental hygiene purposes.

3,621,854
ELASTOMERIC COIN SORTER
Samuel A. Redman, Garden City, N.Y., assignor to The National Cash Register Company, Dayton, Ohio
Filed Nov. 5, 1969, Ser. No. 874,205
Int. Cl. G07d *3/04*
U.S. Cl. 133—3 H 3 Claims

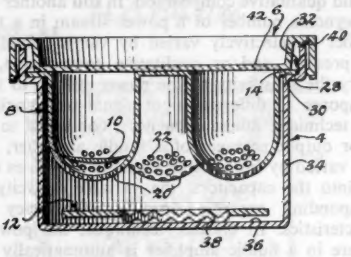


A low-cost coin sorter which utilizes an elastomeric material to sort a pile of coins into an orientated position where each coin can be transported to a designated location. Drive belts, sorting curtains, and rolls constructed of an elastomeric material cooperate to align each coin and transport it out of a pile of coins to a predetermined receptacle.

3,621,855
ARTICLE CLEANING AND STORAGE UNIT
Lewis Rabinowitz, Tonawanda, N.Y., assignor to Ellar Products, Inc., Silver Creek, N.Y.
Filed Sept. 30, 1969, Ser. No. 862,364
Int. Cl. B08b *3/04, 11/02*
U.S. Cl. 134—57 R 12 Claims

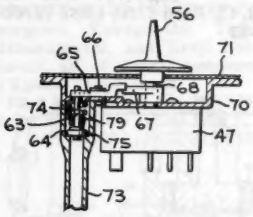
A container is provided with a plural pocketed basket for individually supporting articles, such as contact lenses, within a cleaning and/or storage solution. One

or more movable solution agitating elements, which are loosely positioned within the container out of contact with the articles, are adapted to be sonically vibrated to effect agitation of the solution by either manually moving the container or placing the container on a support device



operable to place the agitating element in a pulsating magnetic field. The support device features a wobble base support for the container, which serves to increase the degree of solution agitation by effecting simultaneous movement of the container.

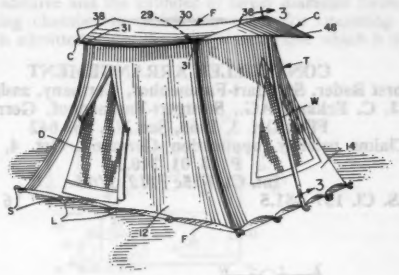
3,621,856
ROTARY CONTROL MEANS FOR CHANGING THE FORCE OF WASHING ACTION IN AN AUTOMATIC DISHWASHER
Lauren W. Guth, Louisville, Ky., assignor to General Electric Company
Filed Sept. 19, 1969, Ser. No. 859,442
Int. Cl. B08b *3/00*
U.S. Cl. 134—58 D **4 Claims**



An automatic dishwashing machine has an air inlet to the machine's pump for the purpose of reducing the energy level of pumped washing liquid during at least one of several manually selectable cycles available in the operation of the machine. The air inlet to the pump receives air through a conduit having its input end located anwardly adjacent the control panel of the machine. The input end of the conduit is provided with a normally closed valve that is operatively linked to a cycle selecting switching mechanism including a manually operable control knob on the end of a rotary shaft. The valve is adapted to be opened to the atmosphere when the cycle selecting switching mechanism is switched to a specific cycle to thereby allow air to flow to the inlet side of the machine's pump and reduce the energy level of the liquid pumped therefrom and into the machine's washing chamber.

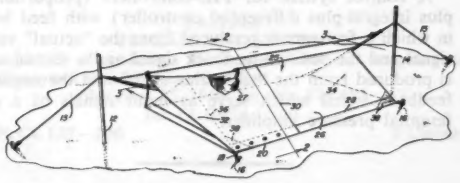
3,621,857
TENT FLY ASSEMBLY AND POLE SUPPORT COMBINATION
Randall L. May and John F. Kurtyka, Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Apr. 9, 1970, Ser. No. 26,914
Int. Cl. A45f *1/14*
U.S. Cl. 135—1 R **8 Claims**

A tent fly in the form of a protective cover of sheet material dimensioned to overlie the roof of the tent is provided with novel supporting and tensioning means to mount the fly in taut condition spaced from the roof of the tent, thereby permitting circulation of air beneath the protective cover over the tent roof. The fly includes



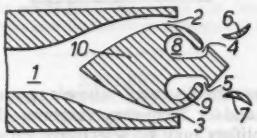
at least one canopy portion which projects outwardly from an end of the tent. Support means is also provided for the canopy portions, which facilitates its extension and tensioning.

3,621,858
TENT CONSTRUCTION
Benjamin F. Steele, 2117 Pecan Drive, Alamogordo, N. Mex. 88310
Filed Apr. 13, 1970, Ser. No. 27,546
Int. Cl. A45f *1/00*
U.S. Cl. 135—1 R **5 Claims**



A wedge-shaped tent having side walls with an entrance formed therein. A flap is attached to the side walls and is adapted to be selectively moved in covering or uncovering relation to the entrance. A drawstring of the clothesline type longitudinally encircles the apex edge of the tent. The flap is connected to a point along the drawstring. By operating the string from within the tent, the flap may be moved to cover or uncover the entrance in the tent without requiring a person in the tent to leave.

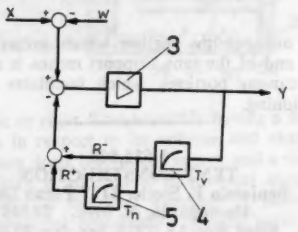
3,621,859
JET DEFLECTION CONTROL SYSTEMS
Athelstane Bodley Scott, Drayton, Middlesex, England, assignor to National Research Development Corporation, London, England
Filed June 25, 1969, Ser. No. 836,505
Claims priority, application Great Britain, June 27, 1968, 30,668/68
Int. Cl. F15c *1/04*
U.S. Cl. 137—81.5 **6 Claims**



The present invention concerns a jet deflection control system for use with a "jet flap" type of control surface, which requires a high momentum in the output jet formed

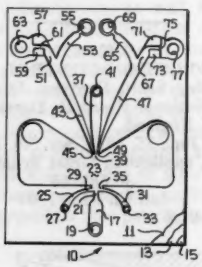
and controlled as near to the point of operation as possible, the control being produced by splitting a primary jet into two subsidiary jets which are normally convergent with deflection being effected by controlling at least one of the subsidiary jets to modify the normal convergence.

3,621,860
CONTROLLER ARRANGEMENT
Horst Bader, Stuttgart-Fasanenhof, Germany, assignor to J. C. Eckardt AG., Stuttgart-Fasanenhof, Germany
Filed Oct. 3, 1969, Ser. No. 863,642
Claims priority, application Germany, Oct. 4, 1968, P 18 01 240.3
Int. Cl. F15c *1/12, 3/04*
U.S. Cl. 137—81.5 **16 Claims**



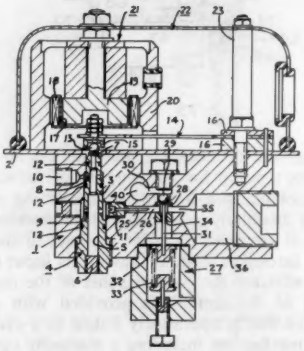
A control system for PID-controllers (proportional-plus integral-plus differential controller) with feed back in which a first sum is produced from the "actual" value signal and the positive feedback signal and a second sum is produced from the "set" value signal and the negative feedback signal which serve as input signals of a differential pressure amplifier.

3,621,861
FLUIDIC AMPLIFIERS WITH ADAPTIVE GAIN AND/OR FREQUENCY RESPONSES
Ronald E. Bowles, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.
Filed Nov. 12, 1969, Ser. No. 875,663
Int. Cl. F15c *3/00*
U.S. Cl. 137—81.5 **78 Claims**



Techniques are disclosed wherein symmetry of operation, gain and/or frequency response characteristics of fluidic amplifiers may be selectively varied. In one technique an amplifier vent passage is provided with one or more inserts which change in size and shape in response to temperature and/or qualitative composition of the working fluid, the latter two parameters being selectively variable to change the flow impedance of the vent passage. Another technique employs a similar insert in a fluidic capacitor connected to the amplifier output passage, whereby the capacity of the output passage, and hence the frequency response of the amplifier, is selectively variable with either working fluid temperature or working fluid qualitative composition. In still another technique the Reynolds number of a power stream in a turbulence amplifier is selectively varied by varying fluid temperature, pressure and/or qualitative composition, whereby to vary the sensitivity of the power stream to turbulence in response to different input signal frequencies. In another technique fluidic capacitors, connected to the input and/or output passages of a fluidic amplifier, are selectively varied by introducing variable quantities of control fluid into the capacitors; the variable capacity provides corresponding variable amplifier frequency response characteristics. In another technique, the power stream pressure in a fluidic amplifier is automatically varied to maintain the minimum power stream pressure necessary to provide a linear amplifier gain characteristics for varying input signal ranges.

3,621,862
FLUID METERING DEVICE
Boguslaw W. Wojtecki, London, England, assignor to Westinghouse Brake and Signal Company Limited
Continuation-in-part of application Ser. No. 600,799, Dec. 12, 1966, and a continuation of application Ser. No. 715,390, Mar. 22, 1968. This application June 9, 1970, Ser. No. 48,822
Claims priority, application Great Britain, Mar. 30, 1967, 14,571/67
Int. Cl. F15b *5/00;* **G05d** *16/00*
U.S. Cl. 137—82 **3 Claims**

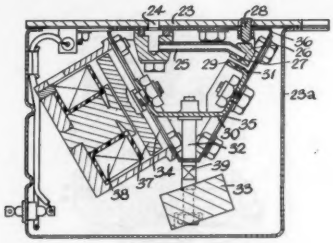


A fluid pressure control valve of which the output pressure is determined by the amount of an input pressure which is dissipated to atmosphere wherein the input pressure is fed through a fluid metering device which maintains a constant pressure difference across a feed choke controlling the flow of air to a converter irrespective of the difference in pressure between supply and outlet.

This results in a much reduced air consumption for zero or low outlet pressures and an evening up of air consumption over the whole range and also an improvement in the linearity of the curve at higher pressure settings.

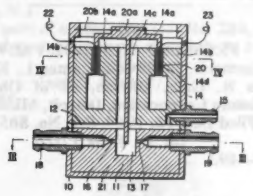
Variations in the supply pressure normally result in slight varations in output pressure for given converter input conditions. These variations in output pressure are virtually eliminated by the inclusion of this device.

3,621,863
VALVES
Douglas Alan Caine, Moseley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England
Filed Dec. 16, 1968, Ser. No. 783,968
Claims priority, application Great Britain, Feb. 1, 1968, 5,136/68
Int. Cl. F16k 31/06
U.S. Cl. 137—83 2 Claims



A valve comprising a body having an inlet for fluid, a member movable relatively to the inlet to control flow therethrough, operating means acting on one end of the member and a pair of expandable support members connected to the ends of the member and by which it is solely supported, the support members being disposed at an acute angle with respect to one another to control movement of the member under the action of the operating means about an arc.

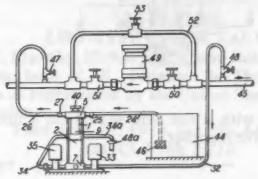
3,621,864
ELECTRICITY-FLUID PRESSURE CONVERTER
Hiroshi Tonegawa, Kawagoe-shi; Tadayuki Kawasaki, Higashi-Matsuyama-shi, and Kenji Nakayama, Higashi-Matsuyama-shi, all of Japan, assignors to Diesel Kiki Kabushiki Kaisha, Tokyo, Japan
Filed July 7, 1969, Ser. No. 839,399
Claims priority, application Japan, June 5, 1969, 44/43576
Int. Cl. G05d 16/00; F15b 5/00
U.S. Cl. 137—83 1 Claim



Electricity fluid pressure converter comprising nozzles disposed in opposite at a distance coaxially, one of which is a delivery nozzle and the other a receiving nozzle having a pressure receiving port of a delivered fluid with its opposite side being an output side, and a shield plate provided in the middle of said nozzles, said plate being displaced to a direction at right angles to the nozzle axes thus varying distribution of the jet speed to change the pressure generated in the pressure receiving nozzle.

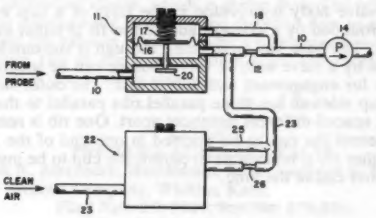
3,621,865
FLUID PRESSURE-OPERATED PUMPS
Thomas Henry Baggaley, 34 Rothschild Street, London, S.E. 27, England
Filed Dec. 22, 1969, Ser. No. 886,882
Claims priority, application Great Britain, Jan. 6, 1969, 805/69
Int. Cl. G05d 11/00
U.S. Cl. 137—98 6 Claims

Apparatus for supplying metered quantities of an additived water flowing under pressure through a pipe comprises a pump which is operated by water from the pipe and includes to coaxial cylinders of different diameters. The cylinders have pistons which are connected to each other and together form a plunger which is spring loaded in one direction. The cylinder of smaller diameter forms a pump chamber for the liquid additive and the cylinder of larger diameter forms an operating chamber to which the water for operating the pump is admitted under the control of a valve which is itself



controlled by a flowmeter in the pipe to allow a pulse of water under pressure from the pipe to act on the larger piston to cause the plunger to make a delivery stroke and then to vent the water to allow the plunger to make a return stroke under the action of its spring, the frequency of the pulses and hence the pump output being dependent on the crate of flow of the water through the meter so that a constant proportion of the liquid additive is supplied to the water flowing through the pipe.

3,621,866
FLUID-MIXING SYSTEM
Joseph O. Thorsheim, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Nov. 25, 1969, Ser. No. 879,683
Int. Cl. G05d 11/00
U.S. Cl. 137—100 5 Claims

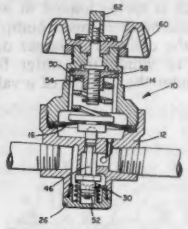


A fluid-mixing system employs two flow rate regulators connected so that one of the regulators meters one of the fluids and the other regulator meters a mixture of the two fluids. In an exhaust gas analyzer that mixes a sample of exhaust gas with air prior to testing there is less fouling of the flow regulator handling the exhaust gas if mixing and consequent dilution occurs before passing through the metering orifice. Also, the orifice through which the mixture flows is considerably larger and therefore less subject to fouling.

3,621,867
AIR LINE PRESSURE REGULATOR
John Leslie Johnson, Morrisville, N.C., assignor to Scovill Manufacturing Company, Waterbury, Conn.
Filed July 17, 1970, Ser. No. 55,757
Int. Cl. F16k 17/02
U.S. Cl. 137—116.5 3 Claims

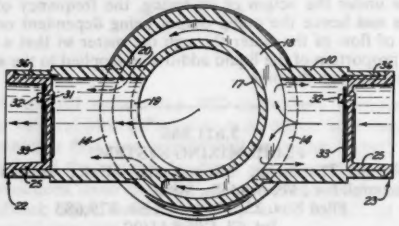
A pressure regulator has its valve member balanced with downstream pressure working on both sides. A novel leak

path through the valve member enables downstream air to reach the other side and incorporates a valve stem having an



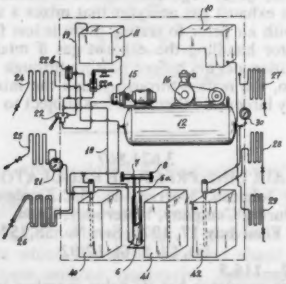
enlarged portion with a flat side seated on a funnel-shaped opening in the valve member.

3,621,868
BREATHING-TUBE CHECK VALVE
Layton A. Wise, Washington, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.
Original application Apr. 29, 1969, Ser. No. 820,070, now Patent No. 3,572,332. Divided and this application Sept. 14, 1970, Ser. No. 071,802
Int. Cl. F16k *51/00*
U.S. Cl. 137—315 2 Claims



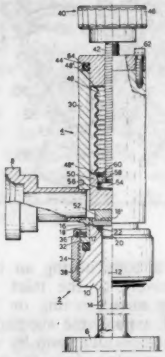
A breathing tube has a pair of circumferentially spaced parallel rib-receiving grooves in each end, with the grooves in one end a different distance apart than those in the other end. A valve body is provided in the form of a cup with a base surrounded by a sidewall adapted to fit in either end of the tube. The base has an opening through it surrounded at each end by a valve seat. A valve closure can be secured to the base for engagement with either seat. The outer surface of the cup sidewall has three parallel ribs parallel to the cup axis and spaced different distances apart. One rib is removable to permit the cup to be inserted in one end of the tube, and another rib is removable to permit the cup to be inserted in the other end of the tube.

3,621,869
VEHICLE SERVICE CENTER
Emilio M. Albarran, Claudio Coello, 44, Madrid, Spain
Filed Mar. 20, 1970, Ser. No. 21,404
Claims priority, application Spain, May 14, 1969, 367257
Int. Cl. B67d *5/14*
U.S. Cl. 137—234.6 12 Claims



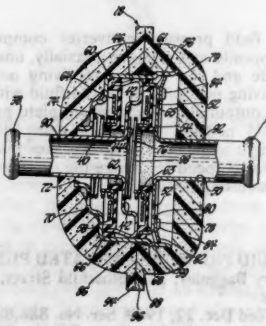
An integrated vehicle service center including an improved lift for raising a vehicle and exposing its underside, together with integral devices for servicing the vehicle.

3,621,870
VACUUM DEVICE INCLUDING VALVE AND SERVICE COUPLING THEREFOR
Micha Harchol, Kibbutz Kineret, and Nachman Pundak, Kibbutz Fin-Harod, both of Israel, assignors to Ricor Ltd., Kibbutz Ein-Harod, Israel
Filed July 31, 1970, Ser. No. 59,887
Int. Cl. F16k *15/18*
U.S. Cl. 137—322 8 Claims



A vacuum device including a valve and a detachable service coupling having a manipulatable operator for opening and closing the valve, wherein the valve includes a magnet member and the operator includes a movable body carrying a magnet engageable with the magnetic member of the valve for opening and closing the valve. The service coupling includes a housing and a bellows seal disposed therein with its upper end fixed to the housing and its lower end fixed to the movable body of the operator. The operator further includes a stem passing through the bellows seal with the upper end of the stem threaded through the top of the housing and the lower end coupled to the movable body for moving it and the magnet to open and close the valve.

3,621,871
PRESSURE CONTROL VALVE
Wilbur J. Zimmerle, Bellbrook; Lamar L. Kerr, Englewood, and Loren R. Gute, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 15, 1969, Ser. No. 885,060
Int. Cl. F16k *17/26*
U.S. Cl. 137—493 4 Claims

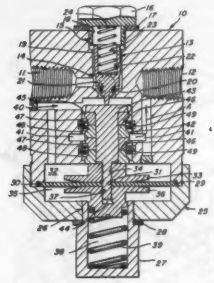


A valve in an automotive fuel tank vent line has a pair of pressure-responsive members which respectively relieve excess pressure and vacuum in the vent line.

3,621,872
SAFETY VALVE

Walter Fisher, 122 Douglas Shand Avenue, Pointe Claire, Quebec, Canada

Continuation of application Ser. No. 753,675, Aug. 19, 1968, now abandoned. This application June 30, 1970, Ser. No. 51,054
Int. Cl. F16k 17/04
U.S. Cl. 137—494 8 Claims

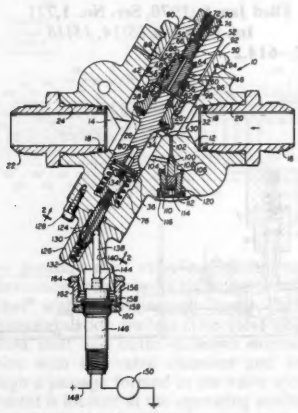


A valve assembly for use in systems involving the regulation of pressure from a high-pressure source to a low-pressure or subatmospheric system. The valve assembly comprises a main valve and an auxiliary valve, means biasing the main valve towards a closed position, a diaphragm, one side of which is exposed to working pressure and the other side of which is exposed to a reference pressure, and a valve-operating member engageable with the main valve and movable with the diaphragm between two limiting positions within which the main valve is opened by the operating member or closed under the action of the biasing means. The valve-operating member engages with the auxiliary valve to close the auxiliary valve on movement of the operating member beyond either of the two limiting positions.

3,621,873
PNEUMATIC FUSE

John G. Kenann, Chatham, and Joseph Detaranto, Jr., Parsippany, both of N.J., assignors to Marotta Valve Corporation, Boonton, N.J.

Continuation-in-part of application Ser. No. 284,148, May 29, 1963, now abandoned. This application July 8, 1969, Ser. No. 839,969
Int. Cl. F16k 31/12
U.S. Cl. 137—495 12 Claims

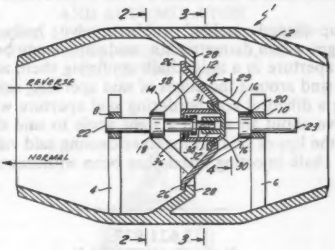


The open position of this pneumatic fuse valve is adjustable to change the rate of fluid flow at which the valve closes. The valve has static pressure balance when opened regardless of the pressure in the pipeline and even though the valve has a connection with the space surrounding the outside of its housing for inserting a means for overriding the actuator. This pressure balance permits adjustment of the valve when there is fluid pressure in the line and it permits the valve to be closed by a small force. A bleed connection equalizes pressure on both sides of the valve to permit it to open after the high rate of fluid flow that closed it has been shut off.

3,621,874
LIFT-TYPE CHECK VALVE

Richard C. Murphy, Hickory Hills, and Balakrishnan R. Nair, Evanston, both of Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Aug. 17, 1970, Ser. No. 64,544
Int. Cl. F16k 17/10
U.S. Cl. 137—512.1 12 Claims

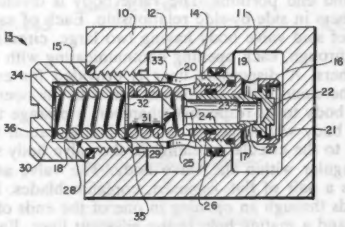


A phased closure check valve having a primary closure means and a secondary closure means positioned on the primary means, both of which are conical and are mounted on a common shaft. Upon reversal of flow, the primary means is seated to thereby throttle the reverse flow through the valve. The secondary means, which is spring biased to retard closing, is subsequently closed by the throttled flow to completely close the valve in a manner which substantially reduces the pressure rise in the piping system since the reversed fluid velocity is decreased in stages.

3,621,875
PRESSURE-ACTUATED VALVE

Frank N. Alexander, Hutchinson, Kans., assignor to The Cessna Aircraft Company, Wichita, Kans.

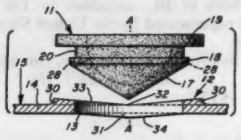
Filed Nov. 25, 1969, Ser. No. 879,816
Int. Cl. F16k 21/06, 17/02
U.S. Cl. 137—514 7 Claims



A pressure-actuated relief valve is disclosed having biasing means urging the poppet to a closed position which biasing means includes a damped and an undamped member cooperating to provide fast response while controlling poppet

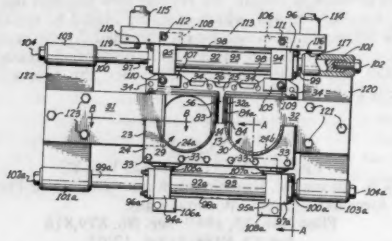
oscillation. The damped member includes a spring within a hydraulic dashpot and serves as a reaction seat for the undamped member. Fast pressure increases compress only the undamped member while longer duration pressure signals will also compress the damped member.

3,621,876
SELF-SEALING CHALK VALVE
Robert K. Campbell, 2985 Newport Blvd., Costa Mesa, Calif.
Filed Jan. 19, 1970, Ser. No. 3,854
Int. Cl. F16k *15/14*
U.S. Cl. 137—525.1 **4 Claims**



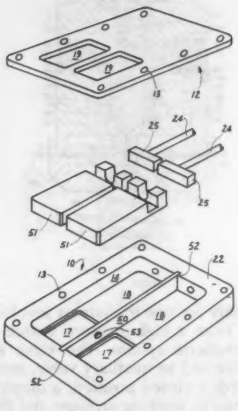
A cup-shaped molded rubber valve body having a diaphragm with a diametric slit, said valve body being forced into an aperture in a rigid chalk confining shell, and expanding into and around the edges of said aperture, said shell embodying a dihedral seat bordering said aperture which bends said valve about an axis at a right angle to said slit, thereby biasing the lips of said slit together causing said valve to close when a chalk-injecting nozzle has been withdrawn from said valve.

3,621,877
VALVE ASSEMBLY
Horst R. Hickmann, Cincinnati, Ohio, assignor to North West 16, Inc., Cincinnati, Ohio
Filed May 18, 1970, Ser. No. 38,107
Int. Cl. F16k *11/02*
U.S. Cl. 137—595 **10 Claims**



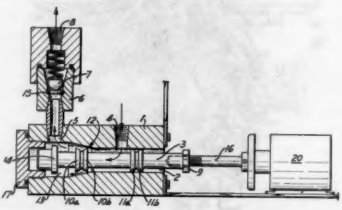
A valve assembly for use in pump means for flowable or semiflowable material, said valve assembly comprising a hollow valve body having a pair of opposite sides, a top, a bottom and end portions. The valve body is divided into two chambers in side-by-side relationship. Each of said opposite sides of said valve body having two large, circular openings therethrough, each opening communicating with one of said chambers. A disposable liner is provided for each of said chambers and forms in conjunction with the openings in the valve body to its respective chamber, a passage through the valve body which has an interior configuration which conforms to the circular openings in the valve body sides and is rectangular within the valve body. The valve assembly includes a pair of flat, opposed, coplanar blades. Each blade extends through an opening in one of the ends of said valve body and a mating hole in the adjacent liner. Each blade is longitudinally slidable within the rectangular portion of its respective liner. Means are provided to simultaneously shift said blades between a first position wherein one of said blades fully closes its respective passage, the other passage being fully open, and a position wherein the other of said blades fully closes its respective passage, the remaining passage being fully open.

3,621,878
VALVE FOR EXHAUST BRAKE SYSTEMS
Harold Cain Smith, 121 Murry Farm Road, Beecroft, New South Wales, Australia
Filed Sept. 15, 1969, Ser. No. 857,706
Int. Cl. F16k *11/00*
U.S. Cl. 137—595 **3 Claims**



The invention concerns an engine braking slide valve for use in a vehicle exhaust system between an exhaust manifold and a gas-driven impeller or turbine for driving a supercharged-type blower. The valve is characterized by a casing having a body portion and a cover portion between which a valve member is slidable to cover and uncover aligned ports in the body and cover portion, the valve member in being so slidable requiring a minimum of effort to move it between the open and "brake" position and being self-cleaning in operation.

3,621,879
FEED CONTROL AND CHECK VALVE SYSTEM
James E. Ticcioni, and Raymond Herman Enters, both of Milwaukee, Wis., assignors to Calgon Corporation, Pittsburgh, Pa.
Filed Jan. 9, 1970, Ser. No. 1,771
Int. Cl. F16k *15/14, 15/18*
U.S. Cl. 137—614.2 **4 Claims**

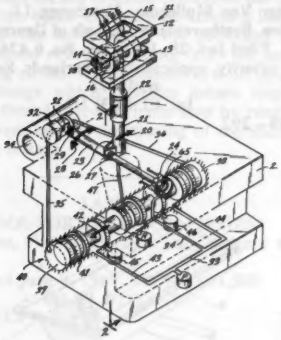


A feed control device is disclosed for controlling the flow of caustic and other aggressive liquids. It incorporates a double safety device including a check valve and a U-cup to stop reverse flow.

3,621,880
JET PIPE SERVO VALVE

James M. Jessee, Granada Hills, and Ernest Niederer, Hollywood, both of Calif., assignors to Bell Aerospace Corporation

Filed June 13, 1969, Ser. No. 833,042
Int. Cl. F15b *13/044*
U.S. Cl. 137—625.64 1 Claim

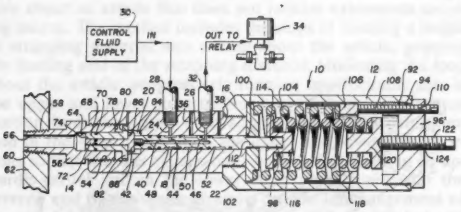


Disclosed is a jet pipe-type servo valve wherein the feed tube is disposed angularly with respect to a flapper to which it is affixed and which is movable by a torque motor the armature of which is connected to the flapper. The feed tube has one end thereof affixed rigidly to the housing and the other end thereof terminating in a nozzle which is positioned adjacent a receiver. The output ports of the receiver are connected to the end chambers of a cylinder within which a power control valve is slidably positioned so as to control the flow of fluid under pressure from a source thereof to an apparatus to be positioned such as an actuator. The jet pipe stage and the power control valve stage are isolated from each other.

3,621,881
HIGH-LOW PRESSURE PILOT VALVE MECHANISM

Felix J. Vicari, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 3, 1970, Ser. No. 60,497
Int. Cl. F16k *11/07, 31/12*
U.S. Cl. 137—625.66 11 Claims

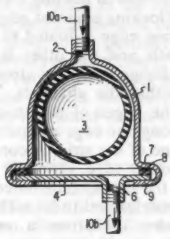


A high-low pressure pilot valve mechanism according to the present invention, comprises a single valve body having a valve chamber with an elongated spool valve element disposed for reciprocation therein. The valve body includes controlled fluid inlet and outlet passages disposed in fluid communication with the valve chamber and are communicated through a passage formed in the valve element when the valve element is located at the operating position thereof. The valve body is provided with exhaust ports in fluid communication with the valve chamber, which ports allow bleeding of pressurized control fluid to the atmosphere when the valve element is disposed in position other than the operating position thereof. Valve actuation is accomplished by a pair of concentric pistons that impart movement to the valve element against the bias of a pair of adjustable compression springs responsive to sensed fluid pressure introduced through a pressure-sensing inlet defined by the valve body. The compression spring and pistons cooperate to move the valve element to a first position in the event the sensed fluid pressure is below an operating pressure range, thereby blocking the flow of pressurized control fluid at the control fluid supply inlet and communicating the control fluid outlet with one of the exhaust ports. One of the compression springs is overcome when the sensed pressure is within a predetermined operating range allowing the valve element to move to a second position communicating the control fluid inlet and outlet and blocking the exhaust ports. Both of the compression springs are overcome upon sensing of pressure above the operating pressure range, thereby allowing movement of the valve element to a third position where the control fluid inlet is blocked and the control fluid outlet is communicated with one of the exhaust ports.

3,621,882
INLINE, THROUGH-FLOW PRESSURE COMPENSATOR AND ACCUMULATOR

Harry P. Kupiec, 10 Dunman Way, Baltimore, Md.

Filed Feb. 25, 1970, Ser. No. 13,985
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 3 Claims

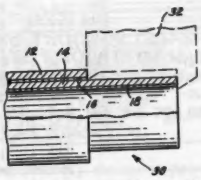


The pressure compensator and accumulator comprises a casing having ports at opposite ends. A hermetically sealed air chamber means of elastomeric material is loosely housed within the casing. The device is serially inserted in the flow line by connecting one port to an open end of the flow line, and connecting the adjacent open end of the flow line to the opposite port, whereby flow takes place through the casing from one port through the opposite port. Means are provided to prevent the blocking of the outlet port by the air chamber means when the means moves toward the outlet port under the influence of the flow.

3,621,883
TRANSITIONAL CONNECTOR

Edwin A. Miller, Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

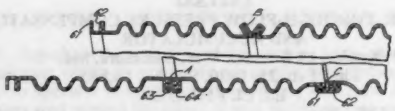
Filed Nov. 24, 1969, Ser. No. 879,072
Int. Cl. F16l *9/02*
U.S. Cl. 138—143 6 Claims



An inexpensive transitional connector, suitable for use in joining aluminum tubes to tubes formed of a variety of other materials which cannot be readily soldered, brazed or welded

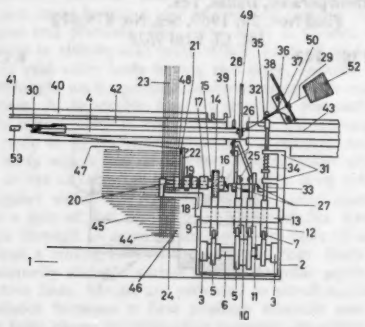
to aluminum, is shown to comprise steel and aluminum tubular elements disposed in coaxial relation to each other, the tubular elements being metallurgically bonded together. Preferably, the transitional connector incorporates a silicon-aluminum layer between the aluminum and steel elements thereof to retard formation of aluminum-iron intermetallic compounds at the interface between the aluminum and steel elements during soldering, brazing or welding of the transitional connector. If desired, the steel element of the connector is clad with a layer of copper.

3,621,884
HELICALLY WOUND TUBING
John Massey Trihey, Balwyn, Victoria, Australia, assignor to Johns-Manville Corporation, New York, N.Y.
Filed Oct. 10, 1969, Ser. No. 865,275
Claims priority, application Australia, Oct. 17, 1968, 44936/68
Int. Cl. F16l *11/16*
U.S. Cl. 138—154 **6 Claims**



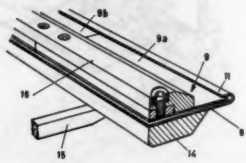
A locked seam is formed in ducting formed by convoluted metal strip and seam locking adjacent edges of adjacent convolutions, in which one edge is folded to form a pair of inwardly facing channels and the other is folded to form a generally T-shaped flange and the arms of the T-shaped flange are locked within the channels. The seam may be formed by folding the edges of the strip before it is convoluted to provide along one edge an open U-shaped element facing out of the plane of the strip. A complementary flange is formed along the other edge, generally of similar U-shape or L-shape and after the strip is convoluted and the edges are mated the U-shape is deformed to form the seam. Apparatus for forming the seam comprises a mandrel removably mounted on a frame and two pairs of forming means disposed about the mandrel, one pair being fixed in its location relative to the frame and the other pair being movable with the mandrel, whereby the mandrel can be changed without requiring adjustment of the forming means.

3,621,885
FILLING CUTTING DEVICE FOR A WEAVING MACHINE
Anton Egloff, Brugg, and Oskar Bernath, Umiken, both of Switzerland, assignors to Georg Fischer A. G. Brugg, Brugg, Switzerland
Filed Sept. 2, 1970, Ser. No. 68,859
Claims priority, application Switzerland, Nov. 21, 1969, 17348/69
Int. Cl. D03d *47/36*
U.S. Cl. 139—122 R **4 Claims**



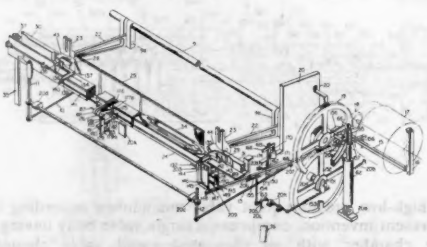
The invention relates to a filling cutting device on a weaving machine with filling insertion from a supply package outside of the warp shed, said filling cutting device being actuated synchronously with the movement of filling insertion members movable in relation to each other, each one provided with a cutting edge, the one of which is situated at the edge of a catching recess for the filling yarn of one cutter member and so oriented as to function with either of two types of pick insertion.

3,621,886
TEMPLE FOR USE IN A WEAVING LOOM
Hubert Peter Van Mullekom, Voortsweg 11, and Geert Jan Vermeulen, Beethovenlaan 34, both of Deurne, Netherlands
Filed Jan. 28, 1970, Ser. No. 6,426
Claims priority, application Netherlands, Feb. 4, 1969, 6901771
Int. Cl. D03j *1/22*
U.S. Cl. 139—292 **5 Claims**



A temple adapted for use in a weaving loom, comprising a bladelike bar adapted to be fixedly mounted in a transverse position in the beating-up zone of the loom, said bar having a bend at one of its longitudinal edges, a second bladelike element extending at one of its longitudinal edges into the seat formed by said bend so as to constitute a tortuous path for the woven fabric passing around the rebent edge of said bar and then around the edge of said second bladelike element, the assembly of said bar and said bladelike core element being characterized by a relatively small overall height when mounted in place in a weaving loom.

3,621,887
PROTECTION AND CONTROL MEANS FOR FLY SHUTTLE LOOMS
Edgar P. Turner, P. O. Box 70, Scotch Plains, N.J.
Filed Oct. 17, 1966, Ser. No. 587,219
Int. Cl. D03d *51/02, 51/44, 51/36*
U.S. Cl. 139—336 **7 Claims**



The invention disclosed herein relates in general to improvements in automatic stopping of fly shuttle looms. As applied to a loom which is arranged for protection stopping responsive to detection of a late shuttle condition prior to arrival of the shuttle within the shuttle receiving box, the invention discloses improved mechanical sensor means for detecting late shuttle arrival at a detection point adjacent the entrance of a shuttle-receiving box, equivalent sensor means adjacent the entrance of an oppositely disposed receiving

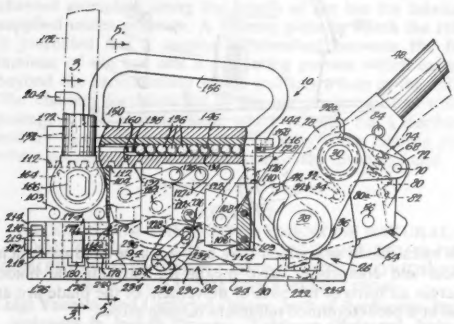
box, and interconnecting linkage means arranged such that when contact of the moving shuttle with one of the said mechanical sensor means causes the said sensor to move from a position within the shuttle flightpath to a position without said flightpath, the oppositely disposed mechanical sensor is caused to move from a position without the shuttle flightpath to a new position within the shuttle flightpath. A clutch quick disconnect element of improved design is also disclosed, together with a novel cam-positioned stop link assembly selectively engageable with the shuttle sensor interconnecting linkage means to cause release of the clutch and engagement of the brake when shuttle action is faulty. A primary benefit of the invention is the providing of shuttle flight-sensing means entirely separate from the independent of shuttle boxing means. Also disclosed is a fill thread detector of novel design which provides means responsive to absence of fill thread to cause loom stop by creating interference to prevent normal functioning of the shuttle sensor interconnecting linkage.

3,621,888

TOOL FOR COTTON BALE TIES

Arvid I. Ericsson, Fort Lauderdale, Fla., assignor to Signode Corporation

Filed June 9, 1969, Ser. No. 831,388
Int. Cl. B21f *45/00*
U.S. Cl. 140—93.2 **20 Claims**



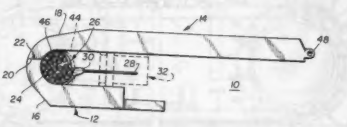
A method and apparatus for providing a plurality of longitudinally spaced integral interlocking means in overlapping upper and lower strap portions to provide a tensioned ligature about an article that does not require extraneous securing means. The method includes the steps of forming a length of strapping material into a loop about the article, gripping the leading end of the strapping material, tensioning the loop about the article, progressively forming interlockable slits in the upper and lower strap portions, severing the upper strap portion from the supply of strapping material, allowing tension in the loop to act upon the upper and lower strap portions so that the slits engage one another, and forming an upwardly struck tab in the lower strap portion adjacent the severed end of the upper strap to prevent disengagement of the interlocking slits. The apparatus includes a ratchet and pawl tensioning mechanism for pulling the strapping material into snug binding engagement with the article, and a rack and pinion actuated linkage structure for progressively shifting a plurality of longitudinally spaced notching elements downwardly into slit-forming engagement with complementarily shaped notching elements of a stationary lower die. The upper strap is severed from the supply of strapping material in response to completion of the strap-slitting operation, and the slitted strap portions are positively stripped from the lower die so that tension in the strap loop will shift the slitted strap portions into interlocking engagement with one another. The separation-preventing tab is formed in the lower strap portion in response to actuation of the mechanism for stripping the slitted strap portions from the lower die.

3,621,889

TOOL JAWS

Laszlo Hidassy, Elizabeth, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Nov. 10, 1969, Ser. No. 875,219
Int. Cl. B21f *9/02*
U.S. Cl. 140—93.2 **7 Claims**



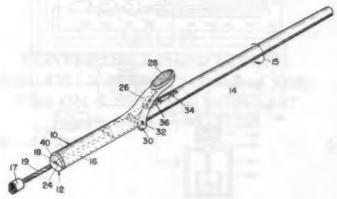
The invention is directed to improved selectively operable tool jaws. The jaws are movably coupled with respect to each other, and are operable to a first, closed, position and a second, open position. In the first closed position the jaws communicate to form a bight, wherein an elongated, substantially U-shaped partially restricted groove longitudinally disposed within a first jaw is aligned with a similar elongated, substantially U-shaped unrestricted groove in a second jaw, providing guiding and forming means for an elongated bundling strap introduced tail end forwardly of the head end within the partially restricted groove of the first jaw and advanced around the bight into the grooved second jaw, the ratio of the radius of curvature of the bight to the thickness of the bundling strap being controlled in such manner as to cause the bundling strap to be partially deformed thereby, and to assume a generally arcuate shape, the tail end portion of the bundling strap curling away from the elongated groove in the second jaw and towards the apertured head end portion which is partially restrained within the elongated groove in the first jaw.

3,621,890

HAND-HELD STRANDED WIRE DRESSING TOOL

Wallace Q. Anderson, East 1203 Gordon, Spokane, Wash.

Filed June 11, 1969, Ser. No. 832,129
Int. Cl. B21f *7/00*
U.S. Cl. 140—123 **8 Claims**



A hand-manipulative tool having a pair of jaws biased to a closed position and manually operable by thumb pressure and the jaws having a channel receptive of the splayed ends of a stranded wire by means of which the strand ends may be closely interwound by twirling the tool.

3,621,891

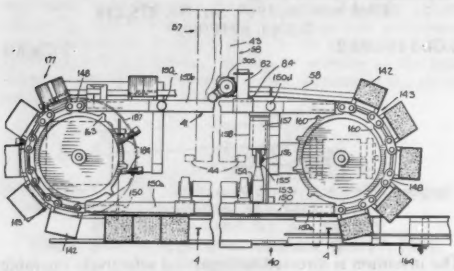
MACHINE AND METHOD FOR TRANSFERRING PREDETERMINED AMOUNTS OF MATERIAL

Bernard C. Eisenberg, Rockaway, N.J., assignor to Solbern Corporation, Fairfield, N.J.

Filed Jan. 27, 1969, Ser. No. 794,083
Int. Cl. B65b *1/36*
U.S. Cl. 141—1 **11 Claims**

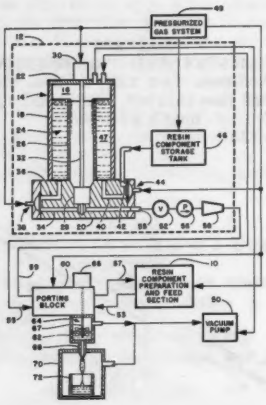
An inclined material delivery means is provided and has passing therethrough a plurality of intermediary receptacle means for receiving predetermined amounts of material to subsequently be transferred to a container. The intermediary delivery means is agitated to provide a uniform and precise amount of material and contains on the bottom thereof door members which synchronize movement of the container

therewith in the discharge area. Cutting means are provided to aid in proper filling of the intermediary receptacles as well



as air supplies to appropriately direct the material being packaged.

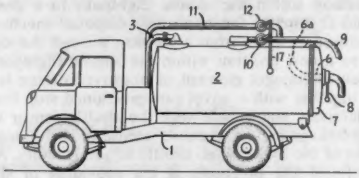
3,621,892
RESIN VACUUM DEGASSING AND DISPENSING SYSTEM AND METHOD
Thomas J. Gillespie, 8212 131st Way North, Seminole, Fla.
Filed Sept. 4, 1969, Ser. No. 855,231
Int. Cl. B65b *31/00*
U.S. Cl. 141—7 **4 Claims**



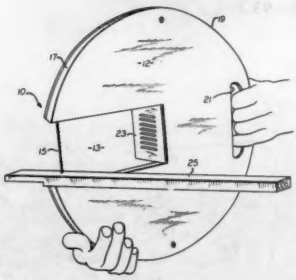
Resin dispensing system including resin vacuum degassing apparatus, a porting mechanism coupled to the degassing apparatus having an outlet and an inlet and interconnecting passageways controlled by diaphragm valves for each resin component, an evacuated mixing chamber coupled to the porting mechanism outlets and to a dispensing nozzle, the dispensing nozzle being coupled to an evacuatable chamber for receiving the mixed resin components.

3,621,893
SUCTION HOSE CLEANING DEVICE FOR FILTH CAR
Minoru Nishimura, and Yasuo Doi, both of Kobe-shi, Japan, assignors to Shin Meiwa Kogyo Kabushiki Kaisha, Kobe-shi, Japan
Filed Sept. 10, 1969, Ser. No. 856,698
Int. Cl. B65b *31/04*
U.S. Cl. 141—65 **3 Claims**

A suction hose of a filth car is associated with a fluid blow pipe having changeover valve means for using fluid discharged under pressure for the purpose of blowing off foreign matter from a clogged portion of the suction hose.

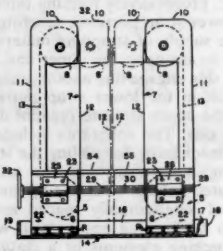


3,621,894
SPIRAL BAND SAW
Eugene J. Niksich, Rego Park, N.Y., assignor to U. S. Plywood-Champion Papers, Inc., New York, N.Y.
Filed Oct. 30, 1969, Ser. No. 872,526
Int. Cl. B27b *13/10*
U.S. Cl. 143—21 A **9 Claims**



A spiral blade saw which may be used as a hand or bench model and comprising drive means for carrying the blade wherein all turns of the path of movement of the blade are at least at a predetermined minimum turning radius.

3,621,895
MULTIBAND MILL
Harold G. Leidig, 1060 S.E. Gladiola, Grants Pass, Oreg.
Filed Aug. 18, 1969, Ser. No. 850,919
Int. Cl. B27b *15/08*
U.S. Cl. 143—22 **1 Claim**



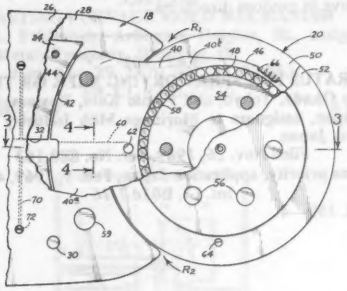
Saw mill apparatus including a plurality of bandsaws cooperatively adjustable relative to each other transversely of the apparatus for cutting successive boards of predetermined thickness from a log firmly supported in its passage through the apparatus. The log is progressively fed to the bandsaws running in the same direction for successive operations to thus utilize the full workload capacity of the apparatus for constant work fed to it.

3,621,896

LUBRICATED CHAIN SAW SUPPORT

Lewis J. Hamilton, 20006 Aqua Drive, Sumner, Wash.

Filed Oct. 27, 1969, Ser. No. 869,686
Int. Cl. B27b *17/12*
U.S. Cl. 143—32 A 5 Claims



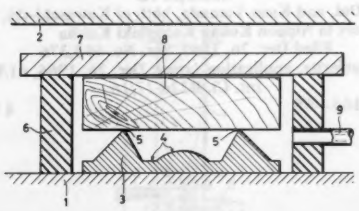
A chain saw bar with a roller for guiding chain over the tip of the bar journaled at the tip end thereof. The bar is laminated and includes a core lamina sandwiched between face laminae, the core lamina being formed to provide a channel extending along the length of the bar for lubricant supplied under pressure. A bearing plate in which the roller is journaled has a portion sandwiched between the face laminae of the bar and a projecting portion which extends beyond the face laminae which journals a hub in the roller. The channel for lubricant in the bar communicates with a passage in the bearing plate, which passage has a discharge end for discharging lubricant on a side of the bearing plate where portions of the roller move over the discharge end.

3,621,897

PROCESS FOR THE IMPROVEMENT OF NATURAL WOOD, PARTICULARLY FOR THE PRODUCTION OF COMPRESSED WOODEN COMPONENTS PROVIDED IF REQUIRED WITH ORNAMENTATION

Luigi Vazzola, and Gottfried Ortner, both of Pordenone, Italy, assignors to Joseph Prugger, Valdaora (Bolzano), Italy, a part interest

Filed Feb. 27, 1970, Ser. No. 15,149
Claims priority, application Italy, Mar. 6, 1969, 13748-A/69
Int. Cl. B27h *1/00*
U.S. Cl. 144—327 10 Claims



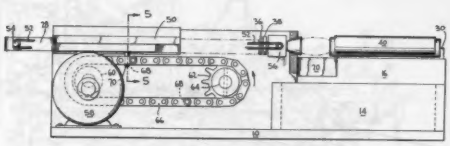
A process for producing compressed wooden components provided if required with ornamentation, comprising the operations of immersing the natural initial wood in an aqueous bath containing pyridene, then drying the wood to a residual moisture content of 12–16 percent and finally compressing the pretreated wood under the simultaneous action of heat at a temperature of about 180° C. During hot compression the desired ornamentation may be impressed by means of a mold corresponding to the negative of the ornamentation. Vacuum may be applied during this operation. Alternatively the wood pretreated by the water-pyridene bath may be first compressed into a panel with plane faces and this panel may be successively further compressed in a mold for impressing the ornamentation.

3,621,898

POWER DRIVEN NUTCRACKER

Henry H. Turner, 2702 Techwood Drive, Columbus, Ga.

Filed Jan. 8, 1970, Ser. No. 1,349
Int. Cl. A47j *43/26*
U.S. Cl. 146—12 9 Claims



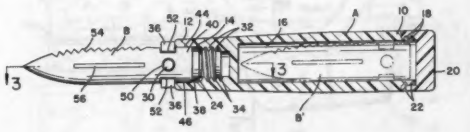
An anvil member and an impact member are guided for independent movement in alignment with each other and provided with relatively adjacent socketed ends for holding between them a nut to be cracked. A hammer is guided for movement in alignment with the impact member and resilient means are provided for urging the hammer into striking engagement with the impact member. For periodically retracting the hammer against such resilient means and releasing it on each cracking stroke, there is provided a sprocket having means for engaging and retracting the hammer throughout a portion of the movement of the sprocket chain and then releasing the hammer to commence its stroke. The anvil member is provided with a longitudinal slot opening through its socketed end and guiding it on a track for movement toward and away from the impact member, the arrangement being such that the end of the track is movable through the slot to clear the socketed end of the anvil as the anvil is retracted.
For confining the shell fragments as the nut is cracked, a shield is telescopically disposed on the anvil member for projection toward the impact member to encompass a nut held between the two members.

3,621,899

CONVERTIBLE HAND UTENSIL

Frank M. Hula, 5201 Hamm Ave., Cleveland, Ohio

Filed Oct. 8, 1969, Ser. No. 864,627
Int. Cl. A47j *17/00, 25/00*
U.S. Cl. 146—43 R 6 Claims



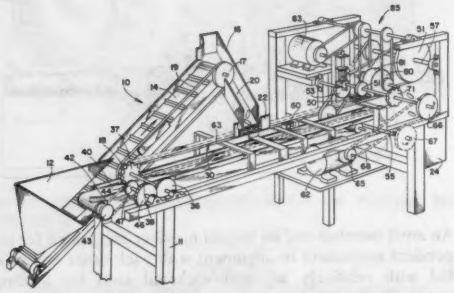
A convertible hand utensil comprising a handle having an internal passageway in communication with the lower end thereof and extending upward therefrom throughout at least a portion of the handle. There is further provided retaining means releasably received in the internal passageway for detachably connecting a variety of implements to the handle. The retaining means has an outer surface and at least one implement locating projection which extends outwardly therefrom. The convertible hand utensil may also include an additional internal passageway which is in communication with the upper end of the handle and extends downward therefrom throughout at least a portion thereof.

3,621,900

APPARATUS FOR AUTOMATICALLY ORIENTING AND TRIMMING VEGETABLES

Walter E. Rood, Ellsworth, Mich., assignor to Michigan Fruit Canners, Inc., a subsidiary of Consolidated Foods Corporation, Benton Harbor, Mich.

Filed July 10, 1969, Ser. No. 840,678
Int. Cl. A23n *15/04*
U.S. Cl. 146—83 6 Claims



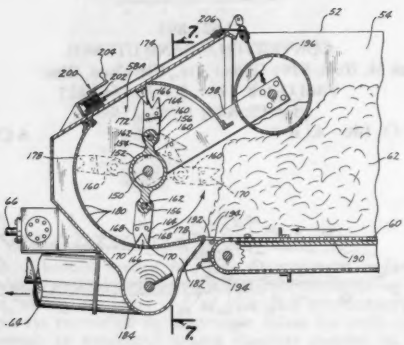
An apparatus for automatically orienting and trimming vegetables comprising a moving receptacle means for receiving the vegetables, means for automatically placing the vegetables onto the moving receptacle, means for automatically orienting the vegetables on the receptacle wherein the vegetables are horizontally disposed such that each end of the vegetable extends beyond the end of the receptacle and means for trimming the extended ends of the vegetables.

3,621,901

LIVESTOCK FEED PROCESSING APPARATUS

John N. Dodgen, and Paul C. Swigger, both of Humboldt, Iowa, assignors to Dodgen Industries, Inc., Humboldt, Iowa

Filed June 3, 1969, Ser. No. 830,013
Int. Cl. A01d *55/18*, *55/22*
U.S. Cl. 146—118 10 Claims



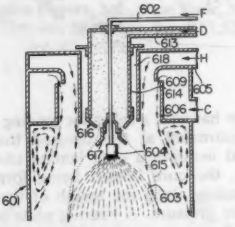
Apparatus for processing animal feed involving a chopper unit in a wagon being fed hay by a conveyor wherein the hay in under compression from a powered roller coordinated in its speed with the speed of the chopper unit. The chopper unit involves one or more rotatable units having blades around its periphery which cooperate with stationary blades in cutting the feed material. One or more pairs of chopper rollers may be provided which turn towards the chopper unit inlet and cooperate with adjacent stationary blades. The material from the wagon may be fed from the chopper unit directly into an apparatus for producing livestock feed pellets having a hammer mill or the like. The chopper unit may also be placed on the machine for producing the pellets. The ground feed prior to being pelletized may be screened by a baffle plate having magnets associated with it for extracting metallic foreign material in the feed. The pellets produced by the pelletizer unit may be sorted by eccentrically operated shaker to separate out the fines. The forward lower end of the shaker being pivotally connected to the frame while the rear raised end is connected to the powered eccentric and may move in random directions.

3,621,902

APPARATUS FOR SPRAY DRYING MILK OR THE LIKE

Katsuto Okada, Tokyo, and Fumio Kato, Kawasaki-shi, both of Japan, assignors to Morinaga Milk Industry Co. Ltd., Tokyo, Japan

Filed Nov. 26, 1969, Ser. No. 880,163
Claims priority, application Japan, Feb. 1, 1969, 44/7085
Int. Cl. B01d *1/16*
U.S. Cl. 159—4 4 Claims



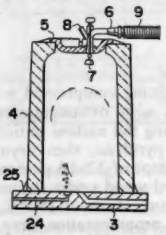
An apparatus for spray drying milk in which drying hot air is blown against a spray of milk sprayed from a nozzle disposed in the upper portion of a drying tower, and at the same time cooled air is introduced into the drying tower so as to surround the flow of hot air so that the portions of the inner walls of the tower which would otherwise be overheated are covered with a layer of cooled air. Further, a first spray of milk in the form of a generally diverging conical sheet is provided in the tower, and simultaneously a second spray is applied to the first spray from its outside in such a manner that the particles of the second spray impinge upon the particles of the first spray at a transient position between a constant-rate drying period and a falling rate drying period of the particles of the first spray, whereby the particles of the second spray are combined with those of the first spray.

3,621,903

METHOD OF BOTTOM CASTING STEEL INGOTS USING LOW VACUUM OF FROM 610 TO 310 MM. HG ABSOLUTE

Yuzuru Doi, and Kozo Yamada, both of Kawasaki-shi, Japan, assignors to Nippon Kokan Kabushiki Kaisha

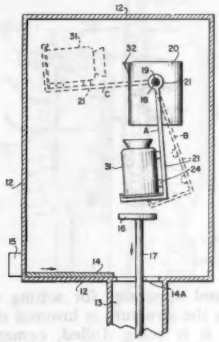
Filed Dec. 26, 1967, Ser. No. 693,376
Claims priority, application Japan, Dec. 26, 1966, 41/84488
Int. Cl. B22d *27/16*
U.S. Cl. 164—65 4 Claims



Molten steel is bottom poured into a mold, the internal gas pressure of which is maintained within the range of 610–310

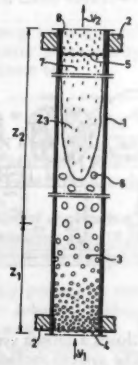
mm. Hg absolute for a major part of the casting period. When the molten steel in the mold reaches a certain height, the mold is sealed against further exhaust of gas. Molten steel is continued to be poured into the sealed mold until the mold is filled, volatile components in the molten steel being thereby prevented from escaping from the sealed mold.

3,621,904
CASTING FURNACE MOLD MECHANISM
William A. Fahlbusch, Arlington Heights, Ill., assignor to Martin Metals Company, Wheeling, Ill.
Filed Apr. 29, 1970, Ser. No. 32,863
Int. Cl. B22d *27/16*
U.S. Cl. 164—256 **4 Claims**



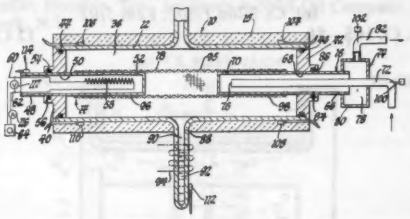
An apparatus for casting, comprising a mold cradle and crucible pivotably but separately mounted to rotate around an axis and releasable means to back the crucible and mold cradle together for unitary movement around the common axis.

3,621,905
METHOD OF IMPROVING THE HEAT TRANSPORT IN A TUBE OF AN EVAPORATOR OR OTHER COOKING APPARATUS
Bengt Hedstrom, Gothenburg, Sweden, assignor to Rederiaktiebolaget Nordstjernan, Nynashamn, Sweden
Filed Feb. 3, 1970, Ser. No. 8,189
Claims priority, application Sweden, Feb. 10, 1969, 1763/69
Int. Cl. F28d *13/00*
U.S. Cl. 165—1 **3 Claims**



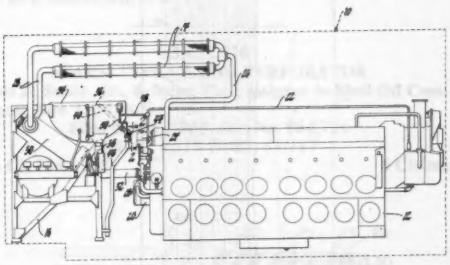
This invention improves the heat transport in a tube of, for example, an evaporator in that the preheating zone for heating a fluid supplied at the lower tube end during its upward flow is shortened by supplying a solid phase of particles to the fluid and maintaining it fluidizing in a particle bed by the upward flow of the fluid.

3,621,906
CONTROL SYSTEM FOR HEAT PIPES
Charles B. Leffert, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Sept. 2, 1969, Ser. No. 854,386
Int. Cl. G05d *23/185*; **F28d** *15/00*
U.S. Cl. 165—32 **5 Claims**



In preferred form, a heat pipe joining a heat source and a heat sink through an evacuated control section. A reservoir is located in direct fluid communication with the evacuated control section and has a predetermined quantity of control fluid therein. A heat-pipe wick within the control section has its wetness varied in accordance with changes in the condition of the control fluid to vary the rate of heat transport between the heat source and heat sink by the heat pipe itself; "wetness" hereinafter being taken as the fraction of total interconnected void volume of the wick that is filled with liquid. In a test device heat transport in the "off" state was increased by a factor of approximately 6 in the "on" state.

3,621,907
COOLING SYSTEM FOR LOCOMOTIVE ENGINES AND THE LIKE
Max Ephraim, Jr., Evergreen Park; Ludvik F. Koci, La Grange Park, and Humberto Suarez, Forest Park, all of Ill., assignors to General Motors Corporation, Detroit, Mich.
Filed Apr. 30, 1970, Ser. No. 33,319
Int. Cl. F01p *11/02*
U.S. Cl. 165—51 **6 Claims**



A locomotive cooling system has radiators mounted above the normal coolant level during engine shutdown in the engine and water tank so as to drain the radiators when the engine stops, to avoid the possibility of freezing the water therein. An automatic pressure relief and overflow valve is provided which is open during engine shutdown to drain excess water from the cooling system so as to prevent the retaining of any coolant in the radiators. When the engine is

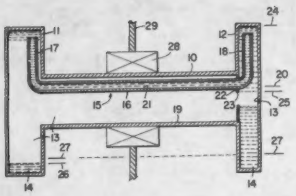
operating, the valve is normally closed by engine lubricating oil pressure to permit normal pressure buildup in the engine cooling system. However, the valve opens to relieve excess pressure in the cooling system. Manual opening means are also provided to relieve system pressure during engine operation.

3,621,908

TRANSPORTING THERMAL ENERGY THROUGH A ROTATING DEVICE

Milton F. Pravda, Baltimore, Md., assignor to Dynatherm Corporation, Cockeysville, Md.

Filed Sept. 4, 1970, Ser. No. 69,729
Int. Cl. F28d *11/02; F28f 5/02*
U.S. Cl. 165—86 **12 Claims**



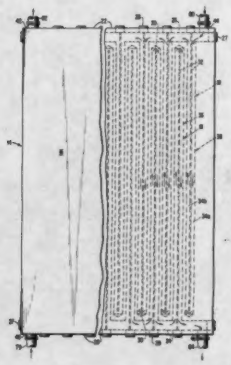
The invention provides for transporting heat through a sealed rotating device. It is of value for cooling rotating elements that are subject to heating, particularly elements that cannot be cooled by conventional means, such as the rotor of an enclosed motor or generator.

3,621,909

HEAT EXCHANGE UNITS AND HEATING SYSTEMS EMPLOYING SUCH UNITS

Horace L. Smith, Jr., 301 Lock Lane, Richmond, Va.

Filed Aug. 4, 1970, Ser. No. 60,855
Int. Cl. F28d *7/02*
U.S. Cl. 165—168 **2 Claims**



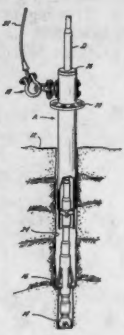
Heat exchange units of the type in which a fluid heat transfer medium is circulated in counterflow relationship through independent flow paths. Heating systems employing such heat exchange units.

3,621,910

METHOD OF AND APPARATUS FOR SETTING AN UNDERWATER STRUCTURE

Lawrence Sanford; Weldon Medders, and Jack Chadderdon, all of Houston, Tex., assignors to A-Z International Tool Company, Houston, Tex.

Filed Apr. 22, 1968, Ser. No. 723,129
Int. Cl. E21b *7/12, 33/035*
U.S. Cl. 166—.5 **7 Claims**



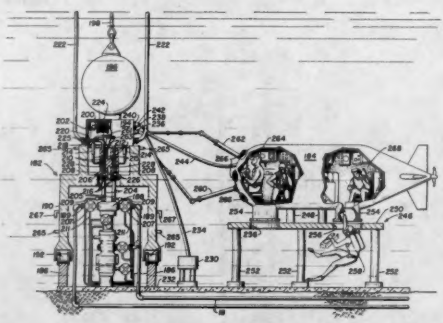
A method of and apparatus for setting an underwater structure in which the structure is lowered on a drill string into the hole as it is being drilled, cement is delivered through the drill string and placed to secure the structure in the hole and the drill string is recovered. This abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

3,621,911

SUBSEA PRODUCTION SYSTEM

Charles Ovid Baker, Garland; Eugene L. Jones, Dallas, Tex., and Warren B. Brooks, New York, N.Y., assignors to Mobil Oil Corporation

Continuation-in-part of application Ser. No. 649,960, June 29, 1971, now abandoned. This application Apr. 1, 1969, Ser. No. 858,209
Int. Cl. E21b *43/01*
U.S. Cl. 166—.5 **3 Claims**



This specification discloses a subsea system for the production of fluid minerals. The system includes a plurality of underwater wellheads, each having a remotely actuatable valve thereon which in turn has a mechanical valve actuator. Flowlines connect each wellhead with a production satellite which has means therein for testing the production from the wells and for actuating the remotely actuatable valves in response to the certain results of the production testing. An

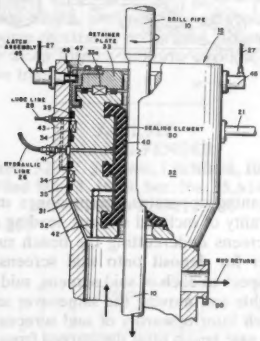
anchoring means is provided at each wellhead for anchoring a work chamber at the wellhead whereby the mechanical valve actuator on the wellhead valves can be operated from the work chamber.

3,621,912

REMOTELY OPERATED ROTATING WELLHEAD

Lemuel D. Wooddy, Jr., Houston, Tex., and Hubert P. Bezner, Chatsworth, Calif., assignors to Esso Production Research Company

Filed Dec. 10, 1969, Ser. No. 883,726
Int. Cl. E21b *33/035*
U.S. Cl. 166—.5 4 Claims



A remotely operated rotating wellhead having a sealing element made of resilient material and a bearing element. The sealing element which is energized by pressure fits inside of and rotates with the bearing element. A retaining cap is provided with retractable, remotely operated latches to permit replacing the sealing element remotely. The lower end of the rotating wellhead is attached to the upper end of a blowout preventer (BOP) stack through suitable subsea connectors.

3,621,913

METHOD OF TREATING CLAY-CONTAINING FORMATIONS

William B. Braden, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,373
Int. Cl. E21b *43/22, 43/24, 43/25*
U.S. Cl. 166—272 5 Claims

Method of treating underground formations containing clays to increase water permeability employing an aqueous solution of an aluminum salt.

3,621,914

STIMULATION AND SELECTIVE PLUGGING OF PETROLEUM RESERVOIRS

Richard S. Fulford, Tulsa, Okla., assignor to Cities Service Oil Company

Continuation-in-part of application Ser. No. 880,390, Nov. 26, 1969. This application Jan. 19, 1970, Ser. No. 4,099
Int. Cl. E21b *43/27*
U.S. Cl. 166—282 6 Claims

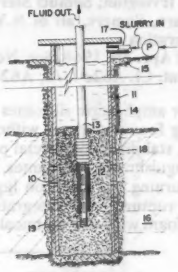
Fractures or highly permeable streaks in a reservoir containing kaolinite are selectively plugged by the introduction of a solution containing hydrazine. The solution attacks the kaolinite-containing particles of the fractures or permeable streaks and decomposes the clay mineral bonds of the rock matrix. The decomposition process causes the walls of the pores to disintegrate and form individual grains of fine clay particles. Subsequent addition of treatment solution transposes the disintegrated particles and lodges them in the exposed pores of the fractures or permeable streaks. Further flow through the treated area is restricted and the reservoir is selectively plugged. Less permeable areas of the reservoir are somewhat stimulated by the kaolinite breakup with the dislodged clay particles from those areas seeking the more permeable channels in the reservoir and further plugging them. The reservoir is thereby both selectively plugged and stimulated by the solution treatment and the reservoir performance is enhanced.

3,621,915

METHOD FOR FORMING A CONSOLIDATED GRAVEL PACK IN A WELL BOREHOLE

Edmond H. Bruist, New Orleans; Tyler W. Hamby, Jr., Metairie, La.; Theodore A. Simon, Houston, and Robert N. Tuttle, Houston, Tex., assignors to Shell Oil Company, New York, N.Y.

Filed Oct. 20, 1969, Ser. No. 867,631
Int. Cl. E21b *43/04*
U.S. Cl. 166—276 15 Claims



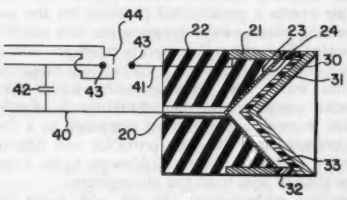
A method of providing sand control of underground formations penetrated by at least one well borehole by forming an epoxy resin consolidated sand or gravel pack of high compressive strength comprising injecting into a well borehole a slurry of sand that has been coated with a solution of an epoxy-containing resin-forming material and a curing agent dissolved in a polar liquid solvent and suspended in a suitable liquid carrier, such as a hydrocarbon liquid, having a limited solubility and a limited capacity for extracting the polar solvent from the resin-forming material. The curing or polymerization reaction rate of the resin-forming components, under the borehole and formation temperature conditions, is thus controlled so that the final setting of the resin and the consolidation of the gravel pack and adjacent portions of the formation is achieved while the sand or gravel pack is in place in the portion of the well borehole in which it is to be consolidated.

3,621,916

SPARK-TYPE CASING PERFORATOR

Noyes D. Smith, Jr., Bellaire, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Oct. 8, 1969, Ser. No. 864,726
Int. Cl. E21b *29/02, 43/117*
U.S. Cl. 166—297 8 Claims



An electrical spark jet for perforating well casings and formations wherein a shaped spark discharge is used to form a

jet of fluid. The electrodes for the shaped spark discharge comprise a center electrode and an outer cylindrical electrode with an insulator having a cone-shaped indentation being disposed between them. The insulator is coated with a thin conductive film and a cone-shaped metal liner is mounted along but spaced from the conductive film. The liner is coated with an insulation to insure that the spark discharge occurs between the two electrodes and not the metal liner and the conductive film.

The electrical spark jet can also be used to detonate a thin cone of high explosive behind the conical metal liner in order to form a stronger jet without the total explosive effect that would occur if a sufficiently large weight of explosive was used to insure initiation and propagation of the detonation.

3,621,917

METHOD OF EXTINGUISHING LIQUID HYDROCARBON FIRES AND COMPOSITION THEREFOR COMPRISING SILICONE SURFACTANTS

Meyer R. Rosen, Irvington; Samuel Sterman, Chappaqua, and Eric G. Schwarz, Somers, all of N.Y., assignors to Union Carbide Corporation

Filed Apr. 30, 1968, Ser. No. 725,534
Int. Cl. A62c *1/12*; A62d *1/00*
U.S. Cl. 169—1 **29 Claims**

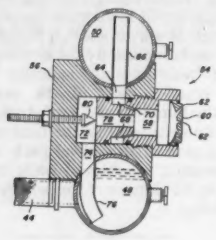
Anionic and/or amphoteric siloxanes in the liquid phase of fire extinguishing foams, with or without other materials as foam promoters, stabilizers or special purpose additives, provide rapid extinguishment of flames, form vapor-securing films over the burning hydrocarbon liquid to prevent reignition upon foam rupture or disintegration, and impart compatibility of the foam with dry chemical extinguishing agents.

3,621,918

METHOD AND APPARATUS FOR SUPPRESSING DUST IN A MINE

Earl M. Damron, 1232 Lions Ave., Morgantown, and Harry E. De Witt, 1509 Morgantown Ave., Fairmont, both of W. Va.

Filed Aug. 14, 1969, Ser. No. 850,074
Int. Cl. B05b *7/00*; A62c *3/00*
U.S. Cl. 169—2 **7 Claims**



Air and water are combined in a vessel and propelled under a controlled balanced pressure through a flexible conduit to a remote location where dust is being created. At this location the admixture of air and water is introduced into a double manifold chamber where the air and water separate. The air exerts a preselected pressure on the water through connecting passageways between the two manifolds. The air and water flow through separate passages into one or more nozzles. The nozzles have a turbulence chamber where the air and water are again admixed under the controlled balanced pressure and the admixture is expelled from the nozzles through a plurality of openings as a fine mist. The mist encapsulates the dust particles and removes the dust particles, including the hazardous particles having a size of 10 microns or less, from the atmosphere.

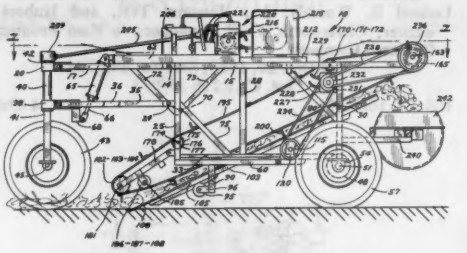
In another embodiment the air and water are propelled separately through flexible conduits under controlled balanced pressures to one or more distributors located remotely from the vessel where the water and air are admixed in a turbulence chamber under the same controlled balanced pressure.

3,621,919

BEACH-CLEANING APPARATUS

Rudolph Olson, Box 448, Braham, Minn.

Filed June 11, 1970, Ser. No. 45,368
Int. Cl. H01d *17/02*
U.S. Cl. 171—120 **3 Claims**



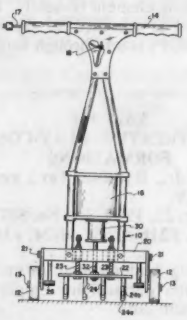
A beach-cleaning apparatus comprising a mobile chassis carrying a plurality of inclined screens, leading elements carried by said screens undercutting the beach surface to pick up beach litter for deposit onto said screens and endless chains with respect to each of said screens, said chains carrying spaced flights and moving the same over said screens to carry said beach litter upwardly of said screens and a receptacle receiving said beach litter discharged from said screens.

3,621,920

LAWN-PERFORATING APPARATUS

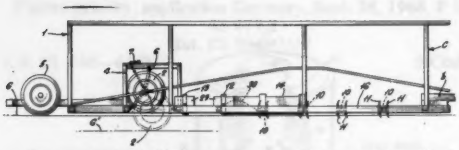
William R. Brown, 1415 Thompson Road, Woodburn, Oreg.

Filed Sept. 22, 1970, Ser. No. 74,376
Int. Cl. A01b *45/02*
U.S. Cl. 172—21 **6 Claims**



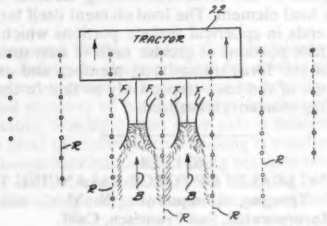
Lawn-aerating apparatus for punching a multiplicity of holes in terrain comprising an electric motor carried on a wheeled frame and coupled to a plurality of spiker rod elements. In a first embodiment the rotary drive cooperates with a cam mechanism, Which is normally decoupled but which engages when pressure is applied against the tips of the spiker rod elements, to vertically reciprocate the rods at relatively high frequency so as to drive them into the ground. In a modified embodiment the spiking elements are in the form of augers which are coupled by a gear arrangement for common rotation by the motor so as to screw them into the ground. In both embodiments the wheels and frame are carried on a spring-biased suspension which assists in the in-and-out motion of the law perforator as it is rolled along the ground punching holes in the terrain.

3,621,921
RACETRACK CUSHION-FORMING APPARATUS
William Wachunas, Strides Farm, Gansevoort, N.Y.
Filed Oct. 13, 1969, Ser. No. 865,562
Int. Cl. A01b *49/02, 63/18*
U.S. Cl. 172—198 3 Claims



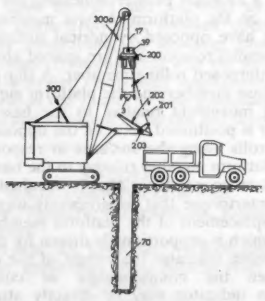
An apparatus which, pursuant to being pulled along the surface of a horse racetrack, performs a loosening and combing action so as to form a uniform cushion layer of loose earth along the track surface.

3,621,922
ROLLING FENDER
Jacob O. Hinken, 321 N. Jackson, Litchfield, Ill.
Filed May 8, 1970, Ser. No. 35,614
Int. Cl. A01b *21/02, 23/06*
U.S. Cl. 172—555 1 Claim



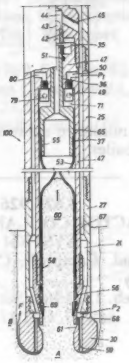
A one-piece rolling fender having a curved central portion with teeth extending outwardly therefrom, each tooth having a concave forward edge and a strengthening rib, which is inclined rearwardly when said tooth contacts the ground, there being a connecting portion between the teeth. This fender shape prevents too much dirt from being thrown up on a plant row by a cultivator, and the fender itself throws the proper amount of dirt up onto a plant row to smoother weeds.

3,621,923
AUTOMATIC BORING GRAB
Pierre Jean-Marie Theodore Allard, 178 Blvd. Francois, Ier, 76 Le Havre, France
Filed Apr. 9, 1970, Ser. No. 26,947
Claims priority, application France, Apr. 28, 1969, 6913500
Int. Cl. B66c *3/02*
U.S. Cl. 175—24 18 Claims



Automatic boring grab comprising a cylindrical body containing a piston slidingly mounted therein and shovels hingedly linked with the end of said piston, whereas said grab is suspended by a single cable controlled by a hoisting machine and comprises setting means controlling the motion of said piston while closing the said shovels as soon as a pull is exerted on said cable, releasing means controlling the opening of said shovels and actuated by stop means freeing the piston, locking means for locking temporarily the shovels in open position, and automatic means for discharging the cuttings during opening of the shovels.

3,621,924
SOFT FORMATION CORE BARREL
Maurice P. Lebourg, 3700 Greenway Plaza Drive Suite 428, Houston, Tex.
Filed Mar. 24, 1970, Ser. No. 22,251
Int. Cl. E21b *9/20, 25/00*
U.S. Cl. 175—58 27 Claims

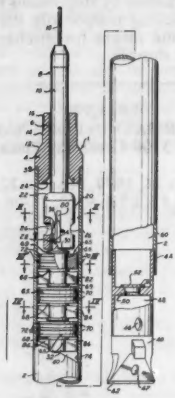


A core barrel device for producing and retrieving subterranean cores, particularly from soft or unconsolidated formations, utilizes a fluid-pressure collapsible sleeve above the corer to receive and hold the core material and permit its retrieval in its original subterranean condition. Pressure responsive valves maintain a fluid pressure behind the collapsible sleeve to retain it in the collapsed position until the core is received in the sleeve and also permit fluid behind the sleeve to exhaust as the core enters the sleeve while the sleeve continues to offer lateral pressure support for the core and also remains collapsed above the core. When the coring device is withdrawn, a small amount of core material falls from the lower portion of the core barrel and the lower portion of the sleeve collapses to retain the remainder of the core within the core barrel.

3,621,925
WELL BAILER
John M. Reynolds, Shreveport, La., assignor to The Reynolds Specialty Company Inc., Shreveport, La.
Filed Sept. 25, 1969, Ser. No. 861,078
Int. Cl. E21b *27/00*
U.S. Cl. 175—232 15 Claims

A plunger for use in well bailers and drilling tools having a plunger mandrel slidably disposed in the body of the bailer and rigid piston rings on the mandrel. The rings have a smaller outside diameter than the inside diameter of the bailer body and a bore through the center of each ring has a larger diameter than the outside diameter of the mandrel, causing the ring to wobble as it moves through the body of the bailer. Grooves are formed around the outer edge of the

ring to agitate fluid passing the edge of ring. Fins are formed

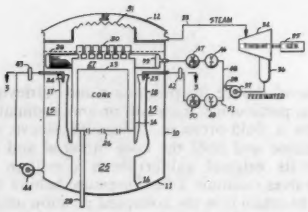


on the mandrel to minimize rotation of the mandrel relative to the body of the bailer.

3,621,926
NUCLEAR REACTOR COOLANT RECIRCULATION SYSTEM

Harold E. Townsend, Campbell, Calif., assignor to General Electric Company

Filed Feb. 13, 1968, Ser. No. 705,039
Int. Cl. G21c *15/24*
U.S. Cl. 176—56 **12 Claims**



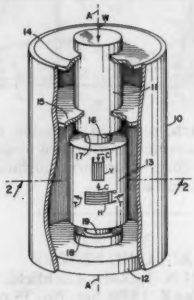
A feedwater augmented jet pump coolant recirculation system for nuclear reactors is disclosed. In this system feedwater is used to drive some of the jet pumps. The majority of the jet pumps are operated at constant flow, while flow control is provided by varying the flow of another part of the feedwater between a feedwater sparger within the pressure vessel and the remaining pumps.

3,621,927
UNITARY LOAD CELL

Alfred Newman Ormond, 11969 E. Rivera Road, Santa Fe Springs, Calif.

Filed Apr. 27, 1970, Ser. No. 31,970
Int. Cl. G01g *3/14*
U.S. Cl. 177—211 **9 Claims**

A unitary load cell structure primarily useful for weighing includes a cylindrical casing, a force-transmitting member in an interior end portion of the casing, and a base member secured to the opposite end portion of the casing. A load element with its load-sensitive axis coaxial with the cylindrical casing is disposed within the casing between the force-transmitting member and the base member. Guide means in the form of first and second axially spaced diaphragms secured at their inner central portions to the force-transmitting member at axially spaced points and at their periphery to the cylindrical casing constrain movement of the force-transmitting member to an axial direction so that only an axial component

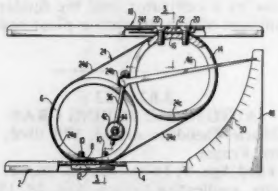


of force applied to the force-transmitting member is transferred to the load element. The load element itself terminates at opposite ends in spherical surface portions which engage concave surface portions of greater radii of curvature at the lower end of the force-transmitting member and an upper central portion of the base respectively so that further isolation of bending moments is realized.

3,621,928
WEIGHING SCALES OF FORCE-BALANCING TYPE

Carleton W. Sprague, Albuquerque, N. Mex., assignor to Rolamite Incorporated, San Francisco, Calif.

Filed Aug. 13, 1970, Ser. No. 63,505
Int. Cl. G01g *1/02*
U.S. Cl. 177—224 **11 Claims**

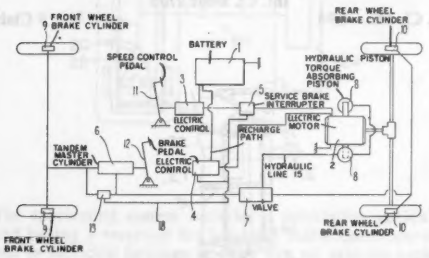


A weighing scale having a platform that moves relative to the base with a movable pointer indicating the weight of an object placed on the platform. A base member and a platform member have opposed cylindrical surfaces which are arranged in parallel relation and are spaced apart from each other by an interposed rolling member. A thin flexible band supports the base member and the platform member for vertical swinging movement relative to the base member. A movable roller is positioned between the opposed cylindrical surfaces and rolls along the surfaces in response to movement of the platform member relative to the base member. A counterweight or counterforce that is attached to the roller applies a countertorque that progressively increases the resistance to displacement of the platform member. A pointer or indicator which is proportionally driven for the torque applied to the roller indicates the weight of the object on the platform when the counterweight or counterforce is balanced. The indicator may be directly attached to the roller or may be driven by intermediate means (mechanical, electrical, hydraulic, pneumatic, etc.) by which the indicated position will be proportional to the applied weight.

3,621,929
BRAKE SYSTEM FOR ELECTRICALLY OPERATED VEHICLES

Heinrich Oberthur, Offenbach-Rumpenheim, and Otto Depenheuer, Bad Homburg, both of Germany, assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Sept. 24, 1969, Ser. No. 860,605
Claims priority, application Germany, Sept. 28, 1968, P 17 88 077.2
Int. Cl. B60l *7/24*
U.S. Cl. 180—65 R **5 Claims**

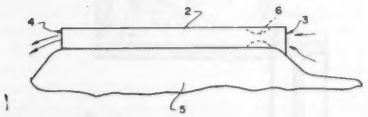


A braking and driving system for electrically operated vehicles including an electric motor for driving the vehicle which may be operated as a generator to provide additional braking and recovery of braking energy by charging the battery. Hydraulic braking on the drive axle is delayed until the maximum level of electromotive braking is reached. This allows the design distribution of braking between the front and rear axles to be maintained while insuring a maximum recovery of braking energy through charging of the battery.

3,621,930
SYSTEM OF ELECTRICITY GENERATION FOR MOTOR-DRIVEN VEHICLES

David D. Dutchak, 2332 West Addison St., Chicago, Ill.

Filed Oct. 22, 1969, Ser. No. 868,472
Int. Cl. B60l *11/18*
U.S. Cl. 180—65 R **1 Claim**



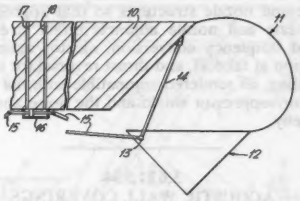
A system of electricity generation for electric motor-driven vehicles consisting of a wind tunnel mounted on an equipped vehicle having open forward and rearward air intake and discharge ends, respectively, the forward open end being flared outwardly constituting an airscoop; plus a Venturi within the air tunnel communicating with the airscoop, and a battery of wind-activated electrically interconnected generators mounted within the tunnel in line communication with its open forward and rearward air intake and discharge ends.

3,621,931
GAS-CUSHION VEHICLES

Rowland D. Hunt, Paulsgrove, Portsmouth, England, assignor to Vosper Limited

Filed Mar. 25, 1969, Ser. No. 810,200
Claims priority, application Great Britain, Mar. 26, 1968, 14,570/68
Int. Cl. B60v *1/00*
U.S. Cl. 180—117 **6 Claims**

A skirt shift system for a gas-cushion vehicle having a flexible segmented skirt in which movement of the skirt relative to the hull is influenced by the provision of pivotable links

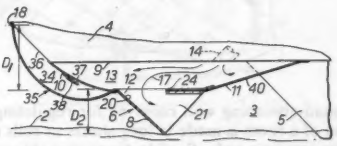


secured to the hull and to the inner corners of the segments, and power operated means are connected to the links.

3,621,932
GAS-CUSHION VEHICLES

Edward Gunston Tattersall, Hythe, Southampton; Peter Riddett, Sarisbury Green, Southampton, and Ronald Christopher Fishlock, Totton, Southampton, all of England, assignors to Hovermarine Transport Ltd., Woolston, Southampton, England

Filed May 15, 1969, Ser. No. 824,960
Claims priority, application Great Britain, May 17, 1968, 23,522/68
Int. Cl. B60v *1/04, 1/16*
U.S. Cl. 180—126 **14 Claims**

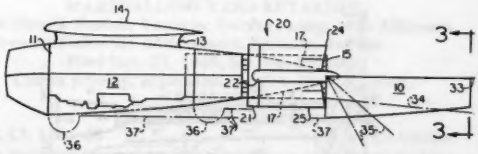


An air-cushion vehicle for operation over water has the front end of the vehicle-supporting cushion contained by a two-stage flexible skirt of inflatable construction. The skirt comprises a row of contiguously disposed flexible members of U-like plan form flexibly suspended beneath the body of the vehicle by inner and outer flexible walls. The outer flexible wall has a rearward rake. The arrangement reduces forces generated due to impact between waves and the vehicle.

3,621,933
METHOD AND APPARATUS FOR SUPPRESSING THE NOISE OF AN AIRCRAFT JET ENGINE

Burt F. Raynes, Chula Vista, Calif., assignor to Rohr Corporation, Chula Vista, Calif.

Filed July 27, 1970, Ser. No. 58,282
Int. Cl. B64d *33/06*; B64c *9/38*; F01n *1/14*
U.S. Cl. 181—33 E **22 Claims**



An aircraft jet engine is provided with a semicylindrical reflector/suppressor shield which for takeoff of the aircraft is extended sufficiently downstream of the engine nozzle to intercept the accompanying cone of noise of the jetstream several nozzle diameters aft of the nozzle in the region of the expansion boundary of the jetstream where the noise level is maximum so that such noise which otherwise would be

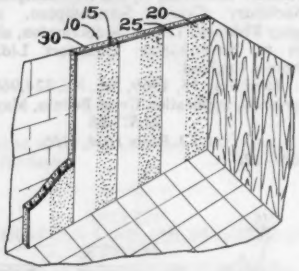
radiated toward the ground is reflected by the shield to thus substantially reduce the effective perceived noise level at the ground.

The shield is interrelated structurally and functionally with the engine and nozzle structures so that appropriately configured nozzle and nozzle adjuncts effect stream division, mixing and frequency conversion, ejector action for thrust augmentation at takeoff, and thrust reversal for aircraft braking on landing, all rendered compatible with the operation of the reflector/suppressor shield and the noise abatement provided thereby.

3,621,934
ACOUSTIC WALL COVERINGS

Donald B. Thrasher, Brecksville, Ohio, and Ezra Earl Dennison, Erie, Pa., assignors to The B. F. Goodrich Company, New York, N.Y.

Filed May 18, 1970, Ser. No. 38,179
Int. Cl. E04b *1/84*
U.S. Cl. 181—33 G **8 Claims**

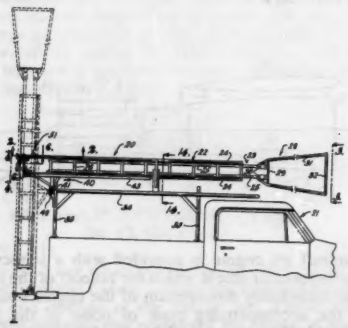


A sound-absorbing wall covering for regulating sound-absorption of a room is made in long sheets or rolls of a flexible laminate consisting of a flexible decorative skin such as vinyl adhered to a soft, porous backing material, preferably a foam polymeric material. Certain areas of the skin contain many very small perforations while the adjoining areas of the skin are imperforate; the perforate-to-imperforate areas typically being in the ratio of 1 to 1, thereby providing in a single sheet, in effect, a multipurpose sound-absorber. After installation, a room may be "fine-tuned" for sound by closing some of the holes in the perforated area.

3,621,935
VEHICLE MOUNTED LADDERLIKE TOWER

John J. Bode, 1923 West 9th St., Hastings, Nebr.

Filed Sept. 2, 1969, Ser. No. 854,649
Int. Cl. E06c *5/04*
U.S. Cl. 182—68 **7 Claims**

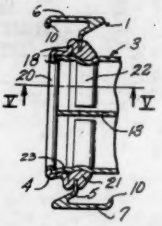


A mobile ladderlike tower on which workmen can ascend to and work at substantial heights above the ground in safety. It has an electrically insulated, partially caged work platform. The tower is for mounting on a pickup truck or other vehicle, and is capable of swinging movement between a horizontal stored carrying position overlying the vehicle and a stabilized upright working position. The tower if made up of telescopic sections for selective extension and retraction and includes appropriate elevating and latching devices for the various conditions of storage and use.

3,621,936
LADDER STRUCTURE

Alfred E. O. Andreassen, Waterloo, Iowa, assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Filed Apr. 17, 1970, Ser. No. 29,507
Int. Cl. E06c *7/08*
U.S. Cl. 182—194 **9 Claims**

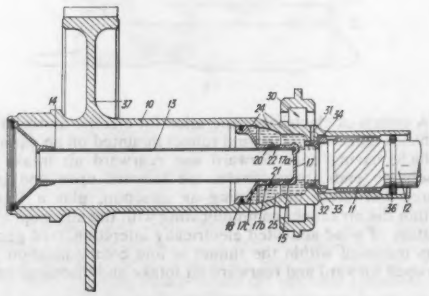


Ladder structure for incorporation in metallic ladders of various types including stepladders and extension ladders among others, staging, bus ducts, etc., and embodying side rail structure, step or rung structure, and connecting means to join the rungs to the side rails.

3,621,937
LUBRICATION SYSTEM

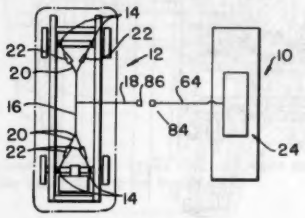
Robert G. Edge, Derby, and Arthur G. Goss, near Derby, both of England, assignors to Rolls-Royce Limited, Derby, Derbyshire, England

Filed Oct. 15, 1969, Ser. No. 866,479
Claims priority, application Great Britain, Oct. 24, 1968, 50,567/68
Int. Cl. F02c *7/06*
U.S. Cl. 184—6.11 **9 Claims**



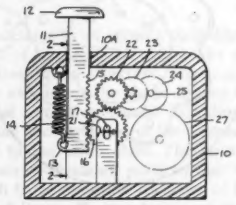
To lubricate the splined connection between a pair of coaxial horizontal shafts, one shaft is hollow and has a lubricant supply conduit therein. One end of this shaft is closed by a cap. Lubricant passes through radial apertures in the shaft and in the cap. A lubricant trap is formed on the shaft. When the speed of rotation of the shaft exceeds a predetermined value, the centrifugal force retains some lubricant in the trap, and below that speed, lubricant spills from the trap to the splines, the cap preventing it from spilling into the hollow shaft.

3,621,938
LUBRICATING SYSTEM FOR VEHICLES
Henry C. Beattie, Marine City, Mich., assignor to Reef-Baker Corporation, Detroit, Mich.
Filed Apr. 7, 1969, Ser. No. 813,858
Int. Cl. F16n 7/14
U.S. Cl. 184—7 CR 2 Claims



The lubricating system includes a lubricating station or island having a reservoir for lubricant and a timer-operated pump to lubricate bearings and the like on vehicles such as buses and trucks. Each vehicle has a conduit system which may be connected to the pump and which leads to the points to be lubricated. A metering device is associated with each point to be lubricated to meter the desired amount of lubricant.

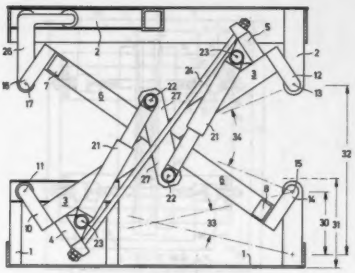
3,621,939
IMPULSE-ACTUATED SPRING MOTOR
David C. Hughes, White Plains, N.Y., assignor to Child Guidance Toys, Inc., Bronx, N.Y.
Filed Jan. 2, 1970, Ser. No. 94
Int. Cl. F03g 1/00
U.S. Cl. 185—39 3 Claims



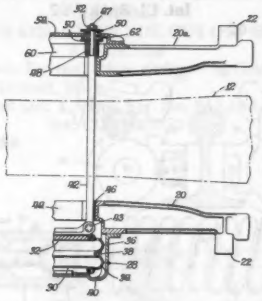
An impulse-actuated spring motor in which a main spring is coupled to a retractable plunger having a rack formed longitudinally thereon, the spring being stretched and subjected to tension when the plunger is physically struck on the free end thereof. The rack engages a spring-biased pinion which is normally coupled to a gear train but is decoupled therefrom during the forward stroke of the plunger resulting from the blow. The return stroke of the plunger is brought about by the tension of the main spring, the pinion being then recoupled to the gear train to operate same.

3,621,940
SCISSOR ACTION HOIST
Alois Lodige, Frankfurter Weg 72, 497 Paderborn, Germany
Filed Nov. 3, 1969, Ser. No. 873,541
Int. Cl. B66b 11/04
U.S. Cl. 187—18 7 Claims

A scissor action hoist having at least one pair of scissor arms joining a platform with a base, and driving means for opening and closing the arms, has at least one member coupled with at least one arm to be under tension when the hoist is under load to prevent bending of that arm.



3,621,941
BRAKE MECHANISM
Bennett Osborn Blout, Berwyn, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.
Filed Dec. 22, 1969, Ser. No. 887,083
Int. Cl. B61h 13/24, 15/00
U.S. Cl. 188—52 6 Claims

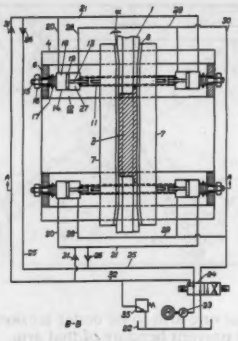


An improved brake mechanism for a railway vehicle truck which may be mounted as shown in the various positions in the drawings and comprises one or more reinforced rubber convolute actuators which replace the standard brake cylinders used in prior art mechanisms. The actuators are without sliding or moving air seals which may be affected by water or ice and require no periodic internal inspection and maintenance.

3,621,942
MARSHALLING YARD RETARDER
Sten Henrik Danieli, Vasteras, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden
Filed Nov. 21, 1969, Ser. No. 878,804
Claims priority, application Sweden, Nov. 22, 1968, 15,895/1968
Int. Cl. B61k 7/08
U.S. Cl. 188—62 10 Claims

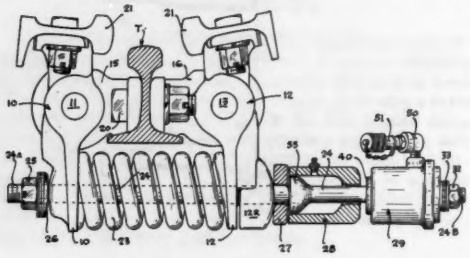
A marshalling yard retarder includes a mechanical braking means with elongated braking members on both sides of the rail movable towards and from the vertical plane of the rail to engage against a wheel rolling on the rail. The braking members are pivoted about horizontal axes and are actuated by hydraulic pistons which are flexibly mounted. The cylinders are supplied by a supply conduit containing a nonreturn valve and a return conduit having a pressure-limiting overflow member which is connected to a storage tank from

which the pressure medium is drawn. There may be two pressure-limiting overflow members set for different pressures,



and a weighing means for selectively connecting these members to the return line.

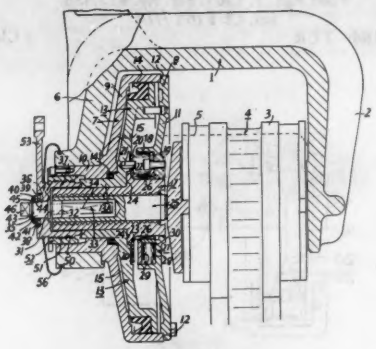
3,621,943
RAILROAD CAR RETARDER
Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, New York, N.Y.
Filed May 21, 1970, Ser. No. 39,448
Int. Cl. B61k *7/02*
U.S. Cl. 188—62 **3 Claims**



A railroad car retarder having pivoted levers for presenting retarding elements to a car wheel has the levers normally biased to a wheel engaging position by a coil spring. The levers may be actuated to a released position by a fluid-operated cylinder, compressing the spring. Means are interposed between the cylinder and adjacent lever in order to relieve the cylinder of shock when the retarder is restored, as by a car moving in or out of the retarder.

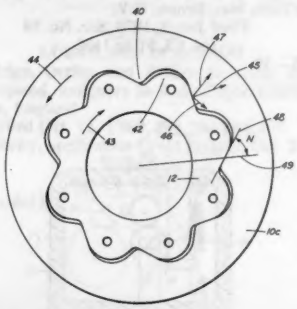
3,621,944
A DISC BRAKE INCLUDING A COMPACT AUTOMATIC SLACK ADJUSTER AND PARKING BRAKE
Keith W. Langley, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England
Filed Oct. 3, 1969, Ser. No. 863,551
Claims priority, application Great Britain, Oct. 23, 1968, 50,220/68
Int. Cl. F16d *55/20, 65/56*
U.S. Cl. 188—71.9 **13 Claims**

A caliper disc brake having a pressure responsive member which acts on a second member which in turn acts on a driven member to actuate the brake discs. The second member also forms a part of both a slack adjuster and a parking brake. As part of the slack adjuster it has helical threads which are engaged by pawls spaced thereabout. As part of the parking brake, it is mounted to be moved axially by a separate actuating element, independently of its movement



by the pressure-responsive means, to act on the driven member to hold the brake against release.

3,621,945
DISC BRAKES
William J. Spry, Lewiston, N.Y., assignor to The Carborundum Company, Niagara Falls, N.Y.
Filed Nov. 12, 1969, Ser. No. 875,841
Int. Cl. F16d *55/36*
U.S. Cl. 188—71.5 **5 Claims**

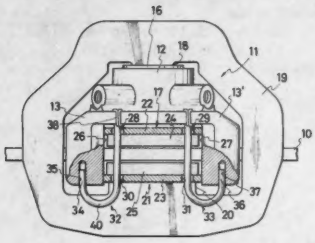


Friction discs for use in multiple disc brakes, e.g., carbon friction discs for use in aircraft brakes, are provided with scalloped perimeters for coaction with driving or restraining elements having similar scalloped perimeters. Both sets of scallops have substantially flat contact surfaces disposed at an angle which optimizes the distribution of force on the friction disc. The friction disc scallops interfit between and engage the coacting element scallops, but are capable of limited expansion and rotary movement between the coacting element scallops.

3,621,946
BRAKE SHOE SUPPORTERS
Yoshinori Mori, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariza, Japan
Filed Dec. 17, 1969, Ser. No. 885,749
Claims priority, application Japan, Dec. 28, 1968, 44/1558
Int. Cl. F16d *65/04*
U.S. Cl. 188—73.6 **5 Claims**

Brake shoe supporting pins for use on a spot-type disk brake which are substantially J-shaped pins and are fixed to

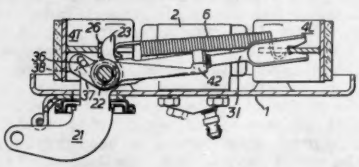
stationary members on opposite sides of the brake disk. The stationary members may be the housing of an operating cylinder on one side of the brake disk and yoke members extending to the other side of the brake disk.



3,621,947
VEHICLE DRUM BRAKES AND ADJUSTING MEANS THEREFOR

Hugh G. Margetts, Tyseley, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed May 12, 1969, Ser. No. 823,616
Claims priority, application Great Britain, May 14, 1968, 22,928/68
Int. Cl. F16d *65/56*
U.S. Cl. 188—79.5 P **4 Claims**



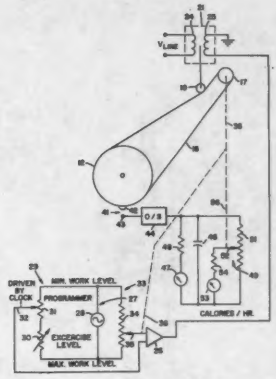
The invention relates to an arcuate shoe drum brake which comprises a pair of opposed, arcuate brake shoes, movably mounted on a fixed brake structure, power-actuated service brake means for expanding the shoes against the drum, auxiliary, mechanical actuating means including an actuating lever engaging one shoe and a strut for transmitting auxiliary actuating forces to the other shoe. The strut includes relatively rotatable screw-threaded parts so that the strut is adjustable in length to compensate for wear of the brake shoe linings. A pivoted lever effects relative rotation of the strut parts in response to excessive travel of the brake shoes upon brake application by the auxiliary actuating means. A prestressed coil torsion spring is coupled to the pivoted lever and urges the said lever in a direction in response to operation of the actuating lever the spring being designed to yield to avoid over adjustment when high-braking loads are transmitted to the strut.

3,621,948
AUTOMATIC FRICTION BRAKING SYSTEM

Keene P. Dimick, Santa Rosa; Anthony J. Iozzi, Moraga, and Earl L. Jackson, San Francisco, all of Calif., assignors to Lifecycle, Inc., Concord, Calif.

Filed June 20, 1969, Ser. No. 834,976
Int. Cl. B60t *13/74*
U.S. Cl. 188—186 **12 Claims**

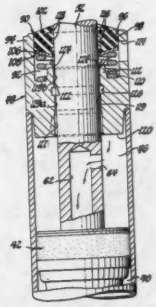
An automatic friction braking system including a brake wheel with an encircling brake band. The brake band is coupled to a pulley biased in a direction opposite the differential tension in the brake band by a spiral spring. A motor operated cam adjusts the tension in the brake band. A potentiometer is coaxially mounted with the pulley to indicate the degree of rotation of the pulley and thus torque load on the brake wheel and is coupled through a closed loop servosystem to the loading motor. A dual potentiometer is also provided for indicating the power dissipation of the brake wheel.



3,621,949
MODIFIED ROD GUIDE FOR CUT OFF SHOCK ABSORBER

Byron L. Watson, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed Oct. 1, 1969, Ser. No. 862,654
Int. Cl. F16f *9/36*
U.S. Cl. 188—284 **3 Claims**



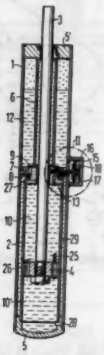
In preferred form, a double direct acting hydraulic shock absorber having a piston rod, a rod guide closing one end of a pressure cylinder and a piston dividing the cylinder into variable volume rebound and compression compartments. The rebound and compression compartments are communicated through an axial rod flow path defined by a side opening in the piston rod, a concentric bore through one end of the piston rod and control valves within the piston. When the rebound chamber is cut off a high-pressure buildup occurs in the cylinder. The rod guide is modified to include an annular high-pressure trap which prevents blowby of such high-pressure fluid past a resilient fluid seal that is operative during normal operation to prevent fluid leakage exteriorly of the unit along the outer periphery of the piston rod.

3,621,950

SHOCK ABSORBER INCLUDING VALVED BYPASS

Dieter Lutz, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed July 31, 1969, Ser. No. 846,390
Claims priority, application Germany, Aug. 8, 1968, P 17 75 415.3
Int. Cl. F16f 9/34
U.S. Cl. 188—315 9 Claims



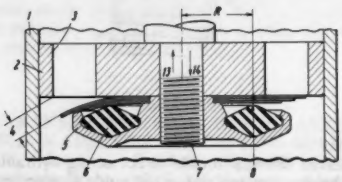
A hydropneumatic shock absorber of the piston-and-cylinder type is equipped with a compensating chamber enclosing a cushion of compressed gas and otherwise filled with liquid which also fills the cylinder. The flow section of a throttling conduit connecting the compensating chamber with the cylinder is controlled by a valve operated by a diaphragm which divides a control chamber into a first portion freely communicating with the compensating chamber and a second portion containing a gas under pressure and a helical compression spring. As the load on the shock absorber increases, the flow section of the throttling conduit is reduced.

3,621,951

THROTTLE VALVE

Leopold Franz Schmid, Pischekstr. 49, Stuttgart-Ost, Germany

Filed Dec. 9, 1969, Ser. No. 883,461
Claims priority, application Germany, Dec. 30, 1968, P 18 17 392.7
Int. Cl. F16f 9/52
U.S. Cl. 188—322 5 Claims



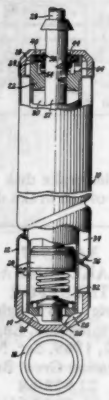
A throttle valve, particularly suited for hydraulic shock absorbers dashpots for motor vehicles, which automatically compensates for a change in the viscosity of the liquid flowing therethrough as a result of a liquid-temperature change. A temperature-responsive expansible ring preferably coacts with resilient valve plates to regulate the flow apertures, and may have either 1° or 2° of freedom of movement in expansion.

3,621,952

SPRING LOADED PISTON ROD SEAL

Paul J. Long, Jr., Dayton, and Joseph P. Pendergast, Bellbrook, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 5, 1969, Ser. No. 874,327
Int. Cl. F16f 9/36
U.S. Cl. 188—322 1 Claim



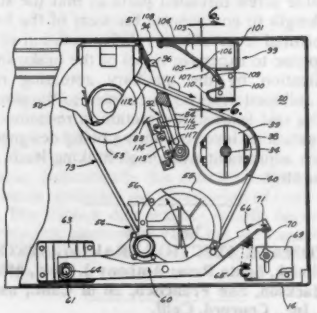
In preferred form, a hydraulic shock absorber piston rod seal of resilient material having an annular collar portion supporting the seal and having radially inwardly projecting end portions on opposite sides of the collar portion which contact the piston rod. One end portion extends axially outward from the shock absorber to prevent the entry of dirt between the piston rod and the seal. The second end portion has a V-shaped cross section adapted to contact the piston rod at a pointed edge to prevent the escape of hydraulic fluid between the piston rod and the seal. An annular garter spring encircles the second end portion to bias the pointed edge of the V-shaped second end portion against the piston rod.

3,621,953

BRAKE-RESPONSIVE MOTOR CONTROL

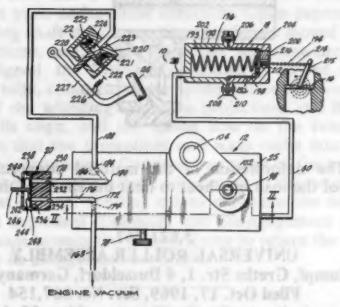
Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Dec. 18, 1969, Ser. No. 886,156
Int. Cl. F16d 67/02
U.S. Cl. 192—1 10 Claims



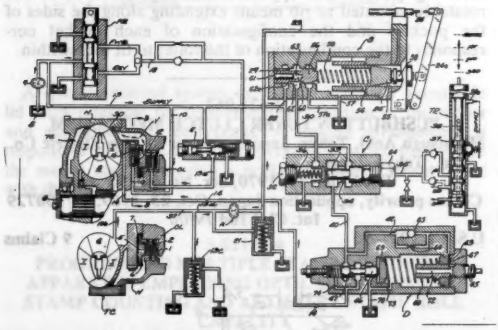
A brake device includes a pivotally mounted arm engageable with a drive belt. The pivotally mounted arm is self actuating for applying a braking drag to the belt responsive to deenergization of the motor. A switch is positioned juxtaposed the brake arm and responsive to movement of the brake arm to the braking position for maintaining the motor deenergized during the braking operation.

3,621,954
SPEED CONTROL SYSTEM
James T. Ligon, 800 South Main, Almont, Mich., and David L. Lang, 182 Birch Hill Drive, Rochester, Mich.
Filed Jan. 22, 1970, Ser. No. 4,981
Int. Cl. F02d *11/08*; B60k *31/00*
U.S. Cl. 192—3 T 25 Claims



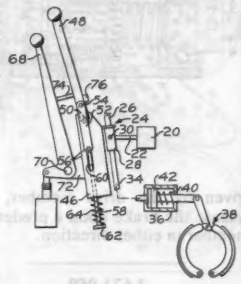
A speed control system effective to maintain the speed of a prime mover substantially constant under varying load conditions in which a control member oscillatable at a rate which is a function of the speed of the prime mover is utilized to modulate and control fluid pressure applied to pressure responsive means actuatable to vary the speed of the prime mover.

3,621,955
TORQUE LIMITING CLUTCH FOR TORQUE CONVERTER CONTROLLED BY SPEED AND TRANSMISSION SELECTOR
James B. Black, Roscoe, and Robert W. Meyer, Pecatonica, both of Ill., assignors to Twin Disc Incorporated, Racine, Wis.
Filed Jan. 5, 1970, Ser. No. 708
Int. Cl. B60k *21/04*; F16d *39/00*
U.S. Cl. 192—3.57 3 Claims



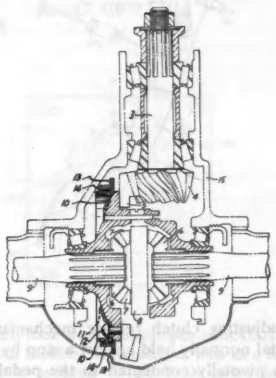
A power transmission including a hydrodynamic torque converter and a modulated clutch, having a hydraulic control system for limiting the amount of torque which is capable of being applied to the wheels of a vehicle or the like. The control system includes an output driven pump which produces a signal flow proportional to its speed, and this signal is conducted to a variable orifice torque limiter valve. The torque limiter valve in turn controls the available fluid pressure which is conducted to the modulatable clutch, which clutch in turn determines the power output. Thus the output speed of the transmission is "read" and through a control system the output speed is controlled to limit the output torque.

3,621,956
PARKING BRAKE AND TRANSMISSION INTERLOCK
David S. Suckow, Decatur, and Larry G. Warren, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Jan. 14, 1970, Ser. No. 2,717
Int. Cl. F16h *57/10*
U.S. Cl. 192—4 A 3 Claims



A control system for a vehicle having a parking brake and a transmission is provided with a mechanical lever system and valve arrangement which prevents shifting the transmission into gear when the parking brake is engaged.

3,621,957
AUTOMATIC SAFETY BRAKE FOR AUTOMOTIVE VEHICLES
Laurence L. Howe, 5338 North 22nd Drive, Phoenix, Ariz.
Filed Oct. 31, 1969, Ser. No. 872,807
Int. Cl. F16h *57/10*
U.S. Cl. 192—3 R 2 Claims

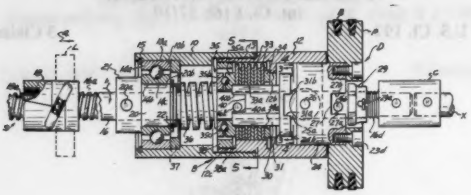


This invention consists of a brake drum that is riveted or otherwise secured to the case in the differential of an automotive vehicle. The brake drum is encompassed by a brake shoe that is provided with a lining which acts on the aforesaid brake drum when the shoe is tightened by a spring-loaded bolt. When the key of the ignition switch of the vehicle is turned off, the electric current from the ignition switch holds an elliptical cam open by means of a solenoid.

3,621,958
BIDIRECTIONAL NO-BACK UNIT FOR BALL SCREW UTILIZING ROLLER CAMS
Edwin O. Klemm, Saginaw, Mich., assignor to Saginaw Products Corporation, Saginaw, Mich.
Filed Aug. 17, 1970, Ser. No. 64,248
Int. Cl. F16d *67/00*
U.S. Cl. 192—8 R 20 Claims

Apparatus comprising a rotatable output member, a rotatable drive member for rotating the output member in either

direction, a releasable brake for substantially preventing rotation of the output member in either direction when it is



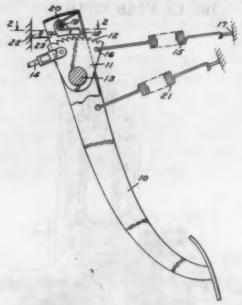
not being driven by the drive member, and mechanism operable to release the brake upon a predetermined rotation of the drive member in either direction.

3,621,959

SELF-ADJUSTING CLUTCH RELEASE MECHANISM

Ronald John Gale, Hornchurch, and Ronald Frederick Hale, Billericay, both of England, assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 8, 1969, Ser. No. 882,950
Claims priority, application Great Britain, Dec. 20, 1968, 60,836/68
Int. Cl. F16d *13/75*
U.S. Cl. 192—111 A 9 Claims



A self-adjusting clutch release mechanism comprising a clutch pedal normally held against a stop by a return spring. A pawl is pivotally connected to the pedal and engages a ratchet member that is linked to the release lever of a clutch. Displacement of the ratchet member by the pawl when the pedal is moved disengages the clutch. The pawl disengages from the ratchet member when the pedal is held against the stop. A spring connected to the ratchet member takes up any slack in the connection between the ratchet member and the clutch when the pawl is disengaged.

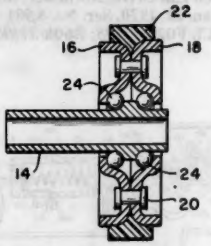
3,621,960

CONVEYOR WITH ROLLERS HAVING TIRES OF HIGH-HYSTERESIS MATERIAL

Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio

Filed Apr. 4, 1969, Ser. No. 808,851The portion of the term of the patent subsequent to May 13, 1986, has been disclaimed.
Int. Cl. B65g *13/00*
U.S. Cl. 193—35 A 4 Claims

A gravity conveyor having rollers to retard the speed of the load. Each roller is provided with a tire formed of a urethane polymer having a durometer hardness between about 60 and



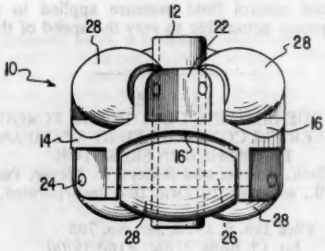
85A. The deformation of the material converts sufficient energy of the load into heat to limit the speed of the load.

3,621,961

UNIVERSAL ROLLER ASSEMBLY

Karl Stumpf, Grethe Str. 1, 4 Dusseldorf, Germany

Filed Oct. 17, 1969, Ser. No. 867,154
Claims priority, application Germany, Mar. 27, 1969, G 69 12 437.4
Int. Cl. B65g *13/00*
U.S. Cl. 193—37 6 Claims



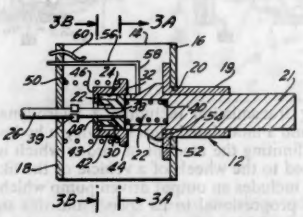
A universal roller assembly for use in a universal roller conveyor wherein the center disk is corrugated to provide alternating pockets on opposite sides thereof. Rollers are rotatably mounted to rib means extending along the sides of the pockets and the configuration of each pocket corresponds to the configuration of the roller to fit therewithin.

3,621,962

PUSHBUTTON TUNER CLUTCH MECHANISM

Masatsugu Aoki, Tokyo, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1970, Ser. No. 64,198
Claims priority, application Japan, Oct. 23, 1969, 44/100729
Int. Cl. F16d *19/00*
U.S. Cl. 192—95 9 Claims



A clutch mechanism for a pushbutton tuner effects operative driving engagement between a depressible adjusting shaft and a tuning shaft, both axially aligned and rotatable in a

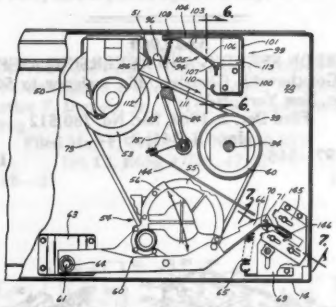
housing. The adjusting shaft is accessible externally of the housing and has a housing-enclosed part which is tubular in shape with spaced longitudinally extending grooves in the tube walls. A spring-urged tubular connecting member having spaced protrusions is received within the adjusting member tube part, with the protrusions riding within the grooves, and at a base thereof the tube bore walls are contoured to mate with projections on the tuning shaft upon alignment therewith. A caplike member encloses the tube part open end, and it is spring urged to move the clutch mechanism to its undepressed condition. Upon depression of the adjusting shaft the connecting member is moved toward the projections, and if the projections and contoured walls are not aligned, the connecting member is forced to slide within the tube, compressing the spring active thereon. Upon rotation of the adjusting shaft, the projections and the contoured walls align, and the spring acts on the connecting member so that the projections and walls come into operative driving engagement. Continued rotation of the adjusting shaft in either direction effects adjustment of the tuning shaft without lost motion. Holding means maintains the adjusting shaft in its depressed condition, and disengagement of that holding means permits the second spring to return the adjusting shaft to its undepressed condition.

3,621,963

SPINNER CONTROL FOR A LAUNDRY APPLIANCE

Thomas R. Smith, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa

Filed Dec. 18, 1969, Ser. No. 886,117
Int. Cl. F16d 71/00
U.S. Cl. 192—136 **17 Claims**



A spinner control system includes a manually actuatable lid latch operable for controlling energization of the motor and actuation of a belt brake. A linkage arrangement is responsive to the lid latch for operating a switch to energize the motor and for moving a brake arm out of engagement with the belt.

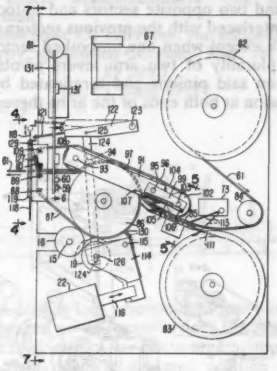
3,621,964

PROGRAMMED MULTIPLE STAMP DISPENSING APPARATUS EMPLOYING OPTICAL ELECTRONIC STAMP COUNTING AND AUXILIARY STAMP ROLL CAPACITY

John B. Riddle, Los Altos Hills; Frederick K. Tanaka, Hayward; Franklin B. Lawrence, Saratoga, and Fred S. Mueller, Sunnyvale, all of Calif., assignors to Micro-Magnetic Industries, Palo Alto, Calif.

Filed Sept. 22, 1969, Ser. No. 859,848
Int. Cl. G07f 11/66
U.S. Cl. 194—10 **24 Claims**

A coin-activated stamp dispenser apparatus wherein the stamps are driven by a flexible belt drive is described. An auxiliary stamp supply roll is provided, the stamps therefrom being automatically threaded through and dispensed from the dispenser upon depletion of the stamps from a main supply roll. An optical-electronic system is used for both stamp counting and positioning the stamps for cutoff. Electronic counting circuits such as binary counters are used in combination with the optical counter for counting stamps. An electrical program board is utilized for simple and flexible



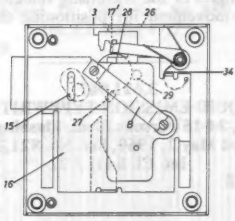
programming of a plurality of stamp dispenser units to permit various denominations of stamps to be dispensed for various coin values.

3,621,965

COIN-OPERATED LOCK

Heinz Ten Eicken, Heiligenhaus, Germany, assignor to Schlossfabrik Schulte-Schlagbaum AG, Tonisheide, Germany

Filed Sept. 29, 1969, Ser. No. 861,724
Claims priority, application Germany, Apr. 19, 1969, G 69 15 727.3
Int. Cl. G07f 17/14
U.S. Cl. 194—59 **8 Claims**



A coin-operated lock which comprises a lockbox including a lock bottom and lockbox sidewalls, as well as a lock cover. A cylinder lock is secured to the lock cover including a cylinder core. The latter carries at its end a closing wing including a driver pin. A locking latch has a driver slot and the latter receives the driver pin. A spring-biased locking ratchet is coordinated to the locking latch, and a coin is adapted to be displaced jointly with the locking latch and to lift the locking ratchet with its edge during the advancement. A locking plate is disposed above the locking ratchet sitting rigidly on the locking latch and cooperates in a tumberlike arrangement with the locking ratchet.

3,621,966

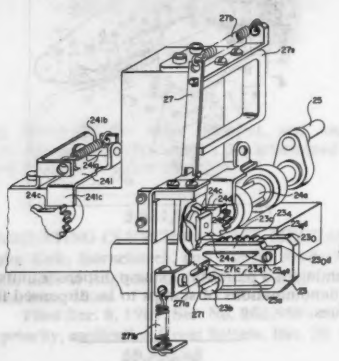
SELECTOR FOR TYPE WHEEL PRINTING MACHINE

Jean-Pierre Murat, Argenteuil, France, assignor to Societe D'Applications Generales D'Electricite Et De Meranique, Paris, France

Filed Feb. 24, 1970, Ser. No. 13,613
Claims priority, application France, Feb. 26, 1969, 69-04887
Int. Cl. B41j 1/46
U.S. Cl. 197—18 **6 Claims**

Selectors for a printing machine having a plurality of type-carrying wheels mounted in a printing carriage. A trans-

versing selector selects a particular type wheel out of all the type wheels and a rotary selector selects a particular type out of all the types carried by the selected type wheel. These two selectors comprise a toothed rack, means for imparting to said rack a reciprocating movement, a plurality of pinions toothed around two opposite sectors and untoothed around two sectors interlaced with the previous sectors and engaging with said rack except when one untoothed sector is opposite the rack, a plurality of two arm levers pivotally mounted respectively on said pinions and terminated by a toothed-shaped extension at both ends of the arms thereof, a plurality



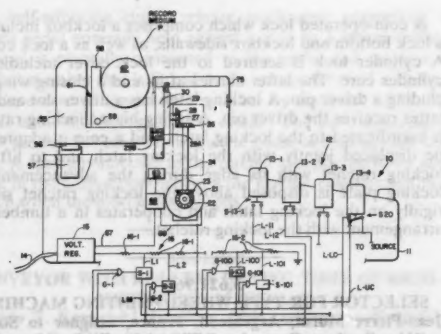
of projections along the rack selectively cooperating with the lever teeth, a plurality of electromagnets respectively associated with said levers, means for selectively placing one of the teeth of the levers on to the path of the rack projections and for selectively allowing the pinions to rotate a half turn and means for converting the discrete rotation angles of the pinions of the rotary selector into a digitalized angular movement for positioning the type-carrying wheels and the discrete rotation angles of the traversing selector into a digitalized rectilinear movement for positioning the printing carriage.

3,621,967

LIQUID EMISSION TYPEWRITER

Irving I. Brown, 34-15 Parsons Blvd., Flushing, N.Y.

Filed May 2, 1969, Ser. No. 821,251
Int. Cl. B41j *1/22*
U.S. Cl. 197—18 **9 Claims**



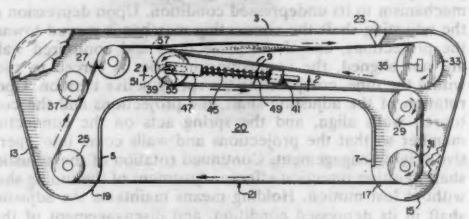
A typewriter is provided which includes a source of liquid under pressure and a wheel carrying character openings on its periphery. A burst of fluid under pressure is caused to pass through an opening adjacent to a liquid discharge outlet after the character-bearing wheel is indexed in conformity with the depression of a typewriter key.

3,621,968

RIBBON CARTRIDGE WITH MOBIUS LOOP IN RIBBON

Nicholas Kondur, Jr., Northville, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 15, 1969, Ser. No. 841,749
Int. Cl. B41j *33/14*
U.S. Cl. 197—151 **3 Claims**



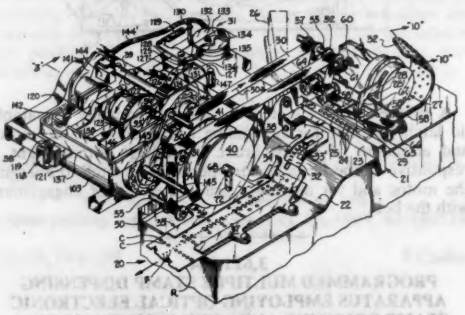
This invention relates to an inking ribbon cartridge for a typing or printing device comprising a case having a flat base and an inked ribbon in the form of an endless belt mounted therein for transport about several parallel aligned rollers. The inking ribbon has a half twist forming a Mobius loop configuration which thereby doubles its effective length. Ink deposits on the ribbon may be replenished by means of an ink pad mounted in contact with the ink ribbon. The ribbon is moved by means of a drive roller which has power coupled to it from the typing or printing machine.

3,621,969

INK RIBBON FEEDING AND REVERSING ASSEMBLY

Paul O. Gotschewski, Glenview, Ill., assignor to SCM Corporation, New York, N.Y.

Filed Dec. 2, 1968, Ser. No. 780,512
Int. Cl. B41j *33/44*
U.S. Cl. 197—165 **10 Claims**



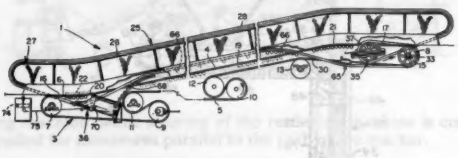
An ink ribbon feeding and reversing assembly for controlling the feeding of an ink ribbon includes a pair of ribbon carriers each of which is drivingly connected to one of a pair of coaxially mounted, selectively rotatable drive spindles. Upon engagement of a clutch with one of the drive spindles, a driving mechanism rotates the one drive spindle, and the ink ribbon is wound onto the ribbon carrier that is connected to the one drive spindle. Once the ink ribbon is completely unwound from the other drive carrier, the clutch is automatically disengaged from the one drive spindle and engages the other drive spindle so that the drive mechanism rotates the other drive spindle, and the ink ribbon is wound onto the other drive carrier.

3,621,970

HANDRAIL DRIVE FOR PASSENGER CONVEYOR

Ernest D. Johnson, Tallmadge, and Kenneth D. Mitchell, Copley, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Oct. 13, 1969, Ser. No. 865,723
Int. Cl. B66b 9/12
U.S. Cl. 198—16 18 Claims



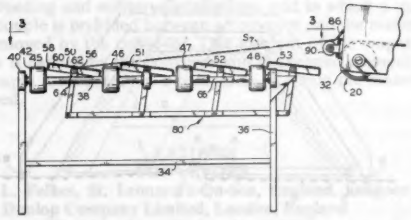
A passenger conveyor system in which the driving force is applied to the handrail by means of a drive sheave mounted on a terminal pulley shaft for the conveyor, and the handrail is maintained under the minimum tension required to produce sufficient drive traction between the handrail and drive sheave for driving the handrail without slippage using a pair of takeup mechanisms, one on each side of the drive sheave. Takeup tension is applied to the handrail only by the takeup mechanism on the slack or exit side of the handrail drive sheave, which varies depending on the direction of rotation of the drive sheave; the takeup mechanism on the tension or entry side is pulled against a stop.

3,621,971

CROSS CONVEYOR FOR WOOD-PROCESSING SYSTEM

Curtice F. Daniels, Sr., S-203 Pacific Ave., Glendale, Oreg., and Curtice F. Daniels, Jr., 1311 N.W. Hawthorne, Grants Pass, Oreg.

Filed May 1, 1969, Ser. No. 820,903
Int. Cl. B65g 47/26, 47/42
U.S. Cl. 198—21 10 Claims



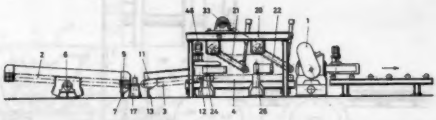
A cross conveyor for conveying strips of material along a path which is transverse to the path along which the strips are delivered to the cross conveyor. The cross conveyor includes a series of parallel but laterally spaced endless conveyor sections alternating with stationary but vertically movable material-support sections. The stationary sections support the strips of material out of contact with the conveyor sections when the strips are first fed to the cross conveyor, but thereafter drop below the level of the conveyor sections to deposit the strips on the conveyor sections without skewing the strips from their prior orientation when delivered to the cross conveyor. The cross conveyor is incorporated in a wood-veneer-processing system including a multideck veneer conveyor-dryer and automatic sequential unloader upstream therefrom, and a sorting conveyor table including automatic stacking apparatus downstream from the cross conveyor.

3,621,972

METHOD AND APPARATUS FOF FEEDING AND GUIDING LOGS TO WOODWORKING MACHINES

Alfred Reuter, Oberkirch Baden, Germany, assignor to Gebruder Linck, Maschinenfabrik Und Eisengieberei, Baden, Germany

Filed June 13, 1969, Ser. No. 833,027
Claims priority, application Germany, Mar. 15, 1969, P 19 13 249.1
Int. Cl. B65g 47/24
U.S. Cl. 198—29 24 Claims



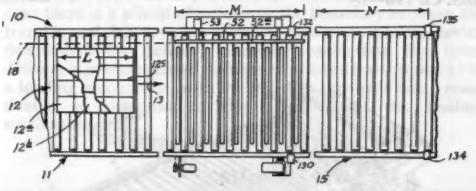
Feeding and guiding logs wherein the log is moved longitudinally and engaged on its opposite sides for centering along the axis of the feed path. After centering, the top of the log is engaged and held down in centered position on the feed path. The log may be again centered and held down one or more times to insure proper positioning of the log. Prior to centering, the feed path is comprised of two longitudinally aligned conveyors which may be tilted toward each other, so that when the log is positioned on both of the conveyors, it will contact essentially only two points thereof enabling the log to rotate about is own axis in the event the weight of the log is unevenly distributed. In addition, a lifting and rotating device may be positioned between the conveyors to lift and rotate the log about its axis to insure the centering point of the log is properly positioned with respect to the path of conveyance.

3,621,973

LOAD-HANDLING APPARATUS

Lloyd Carlson, and William E. Herd, both of Vancouver, Wash., assignors to Columbia Machine, Inc., Vancouver, Wash.

Filed Sept. 18, 1969, Ser. No. 859,031
Int. Cl. B65g 47/22
U.S. Cl. 198—29 26 Claims



Load-handling apparatus including a conveyor for transporting a load along a substantially horizontal path, and a power-operated shifter for shifting a load laterally on the conveyor. The conveyor includes plural spaced-apart power-driven rollers, and the shifter comprises plural spaced-apart rails which are movable upwardly between the spaces between such rollers and laterally of the path mentioned. Positioned adjacent a side of the conveyor is an upright plate against which a load may be shifted. The shifter also is reversible to accommodate shifting a load away from the upright plate. Control circuitry is provided which inhibits operation of the rollers in the conveyor during operation of the shifter.

3,621,974

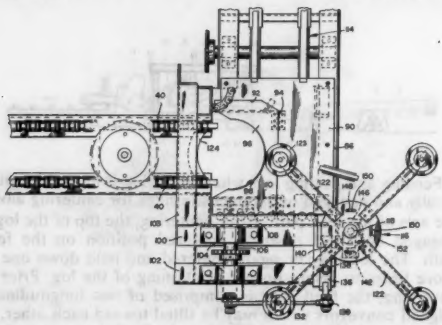
CONVEYORS FOR ROTATABLY MOVING CONTAINERS

Elliott Bavers, New York, N.Y., assignor to Rotodyne Manufacturing Corporation, Brooklyn, N.Y.

Filed Oct. 17, 1969, Ser. No. 867,125
Int. Cl. B65g 47/24
U.S. Cl. 198—33 AB 14 Claims

Conveying apparatus for rotatably moving containers and including an endless conveyor mounting spaced, rotatable

container-supporting stands and means for rotating the supporting stands, a magnet set into the container-supporting surface of each stand, and means automatically moving containers onto successive stands, including a platform for supporting containers and having a hinged extension formed with an opening arranged to overlie the path of the stands and means for pushing a container from the platform onto



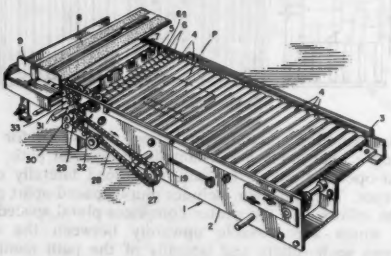
the hinged extension, means lowering the hinged extension to slide a container onto a platform, said extension-lowering means and said container-pushing means synchronized to lower the extension upon movement of a supporting member below said opening and for pushing a container onto the extension while said extension is in level position with the platform.

3,621,975

INDEXING APPARATUS FOR PACKAGE CONVEYOR

Erik O. Vilen, Niles, Ill., assignor to Triangle Package Machinery Company, Chicago, Ill.

Filed Jan. 2, 1970, Ser. No. 249
Int. Cl. B65g *47/26, 47/42*
U.S. Cl. 198—34 **17 Claims**



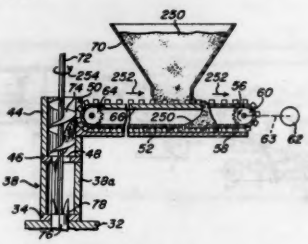
A plurality of packages are moved in a line by a conveyor to a station where some suitable operation is performed thereon, such as being moved by a pusher member to a further station. A gate is interposed in the path of movement of the packages to stop movement thereof temporarily toward the station. Pressure of the package against the gate, moves a part of it into the path of a reciprocating member which removes the gate from the path of the packages to allow the first package in the line to move to the station. This first package is caused to move at an increased rate of speed from the gate to the station to allow the gate to return to its normal position in the path of the next-succeeding package.

3,621,976

APPARATUS FOR TRANSFER OF FLOWABLE MATERIAL FROM A HOPPER

Jesse C. Moore, Fort Recovery, Ohio, assignor to Norman H. Kuhlman, St. Marys, Ohio, a part interest Division of Ser. No. 519,179, Jan. 6, 1966, Pat. No. 3,483,600.

Filed Dec. 4, 1969, Ser. No. 882,032
Int. Cl. B65g *47/18*
U.S. Cl. 198—57 **1 Claim**



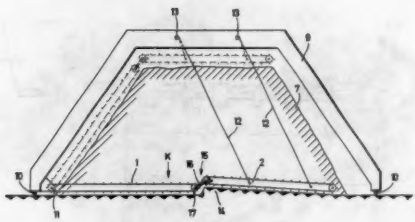
Apparatus for transferring or feeding flowable material to a desired location from a container such as a hopper. A pair of shelf members are disposed below the hopper. The shelves are substantially horizontal and arranged one above the other. A pair of spaced-apart chains or other continuous flexible members have crossmembers therebetween. The crossmembers move over the upper shelf in a direction away from the desired location, and then move over the lower shelf in a direction toward the desired location. The upper shelf is shorter in length than the lower shelf so that material moved upon the upper shelf falls therefrom to the lower shelf and is moved by the crossmembers on the lower shelf to the desired location.

3,621,977

MATERIAL-REMOVING SCRAPER WITH AN ARTICULATED BOOM

Gerhard Fischer, Dortmund-Kirchhorde, Germany, assignor to Gustav Schade Maschinenfabrik, Dortmund, Germany

Filed Oct. 17, 1969, Ser. No. 867,131
Claims priority, application Germany, Oct. 19, 1968, P 18 04 052.3
Int. Cl. B65g *59/00*
U.S. Cl. 198—36 **16 Claims**



A material-removing scraper with a scraping jib movable up and down by means of an elevating unit which consists of an articulated boom of flexibly jointed boom parts, tiltable relative to each other in a vertical plane, in which one delivers the bulk material to be removed from the pile or dump to the other in the area of the hinge connection. Means forcibly hold the delivery end of the one boom part above the receiving end of the other.

3,621,978

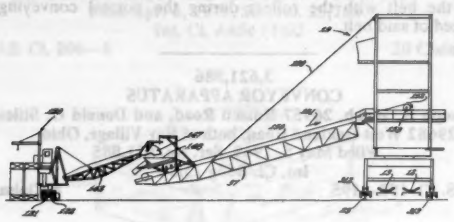
STACKING AND RETRIEVING SYSTEM AND METHOD

Fred T. Smith, Aurora, Ill., assignor to Barber-Greene Company, Aurora, Ill.

Filed July 1, 1969, Ser. No. 838,284
Int. Cl. B65g *61/00*
U.S. Cl. 198—36 **7 Claims**

A stacking and retrieving system for stockpiles of material wherein a self-propelled retrieving machine cooperates with

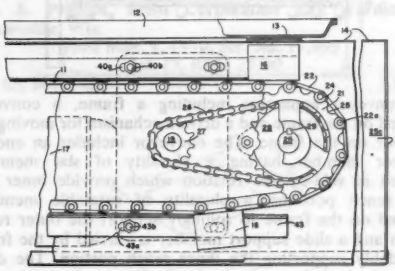
the self-propelled stacker in retrieving material, the speed of the stacker being controlled to conform to that of the retrieving machine, while steering of the retrieving machine is controlled for movement parallel to the path of the stacker.



3,621,979
MAGNETIC CONVEYOR SYSTEM

Robert W. Kraeft, 59 Colonial Road, Emerson, N.J.

Filed Dec. 5, 1968, Ser. No. 781,480
Int. Cl. B65g *17/46*
U.S. Cl. 198—41 **1 Claim**

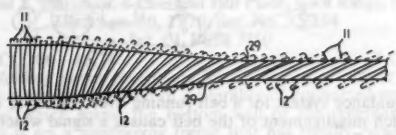


This disclosure pertains to a conveyor system which is primarily designed for use in volume feeding operations where the trays and soiled dishes are returned to the dish room by means of a conveyor, such as schools, hospitals, in-plant feeding and military installations, and in which a magnetic couple is provided between a conveyor and the material to be moved by the conveyor. One element of the magnetic couple is carried by the conveyor and the second element of the couple is mounted on a receptacle in which the material is placed.

3,621,980
CONVEYORS

Hugh L. Folkes, St. Leonard's-On-Sea, England, assignor to The Dunlop Company Limited, London, England

Filed Jan. 26, 1970, Ser. No. 5,490
Claims priority, application Great Britain, Feb. 4, 1969, 6,030/69
Int. Cl. B65g *21/12*
U.S. Cl. 198—110 **10 Claims**

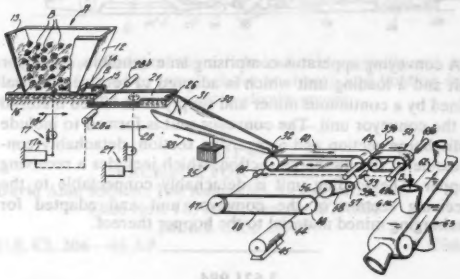


A variable speed conveyor on which passengers or goods are accelerated or decelerated between high-speed zones and low-speed zones, the conveyor comprising pairs of complementary curved elements arranged to slide relative to one another.

3,621,981
AUTOMATIC BOW FEEDING APPARATUS

Philip E. Nimmo, Jr., Wayne, and Richard A. Townsend, Rockaway, both of N.J., assignors to Sun Chemical Corporation, New York, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,177
Int. Cl. B65g *43/00, 37/00*
U.S. Cl. 198—40 **10 Claims**

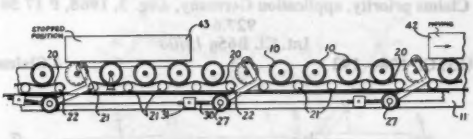


Automatic apparatus for the feeding of soft lightweight ornamental articles, such as bows formed from ribbon, includes a hopper wherein the articles are loaded in random fashion. A primary shuffler constituting the bottom wall of the hopper is reciprocated in a horizontal plane to deliver the articles in a forward direction to a secondary shuffler also reciprocated in a horizontal plane. A first photoelectric device automatically halts reciprocation of the primary shuffler when there is a pileup of articles on the secondary shuffler. The secondary shuffler delivers the articles to the wide-mouthed upper end of a downwardly extending chute having converging sides which terminate in a relatively narrow mouth. A transformer-type vibrator vibrates the chute with very short rapid strokes directed along the longitudinal axis of the chute. Articles tumble from the discharge end of the chute onto a continuous belt transfer conveyor, which delivers the articles to a continuous belt delivery conveyor located adjacent to and in axial alignment with the transfer conveyor. A second photoelectric device deactivates the transfer conveyor whenever there is a pileup of articles at the boundary between the transfer and delivery conveyors. A third photoelectric device deactivates the delivery conveyor each time the latter delivers a predetermined number of articles (one or more) to a loading mechanism, with the delivery conveyor being reactivated in response to the condition of the loading mechanism.

3,621,982
SELF-ENERGIZING BRAKE FOR ROLLER CONVEYORS

Fred J. Fleischauer, Oakmont, Pa., and Theodore A. Hammond, Grand Haven, Mich., assignors to General Logistics Corporation, Oakmont, Pa., by said Hammond and Ermanco Incorporated, Grand Haven, Mich., by said Hammond

Filed Jan. 24, 1969, Ser. No. 793,666
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 **5 Claims**



A brake for a zero pressure accumulation roller conveyor is disclosed in which a flexible band is disposed against certain individually powered conveyor rollers to apply a self-energizing frictional braking force upon being tensioned by a downstream triggering device.

3,621,983
CONVEYING APPARATUS

Einar M. Arentzen, and Frank A. Delli-Gatti, Jr., both of Charleroi, Pa., assignors to Lee-Norse Company, Charleroi, Pa.

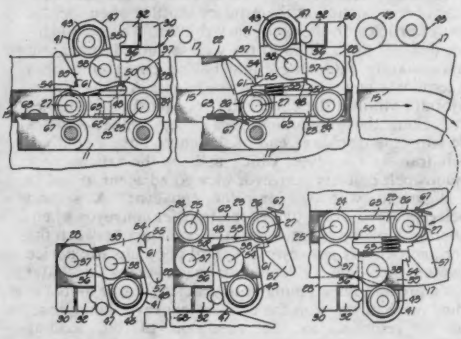
Continuation-in-part of application Ser. No. 816,170, Apr. 9, 1969, which is a continuation of application Ser. No. 637,738, May 11, 1967, now abandoned. This application Dec. 3, 1969, Ser. No. 881,701
Int. Cl. B65g *15/00, 41/00*
U.S. Cl. 198—139 6 Claims

A conveying apparatus comprising an extendible, conveyor unit and a loading unit which is adapted to receive material mined by a continuous miner and supply such mined material to the conveyor unit. The conveyor unit is formed to include a discharge section and a receiving section, detachably connectable to the discharge section, which includes a receiving hopper. The loading unit is detachably connectable to the receiving section of the conveyor unit and adapted for discharging mined material to the hopper thereof.

3,621,984
CLAMPING MECHANISM

Willie K. Grassauer, Menlo Park, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 17, 1969, Ser. No. 792,000
Int. Cl. B65g *17/46*
U.S. Cl. 198—179 18 Claims

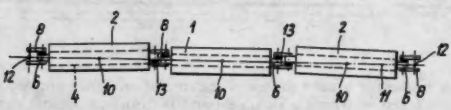


A clamping mechanism automatically adjusts to hold an article with the particular predetermined amount of force desired at each of a plurality of stations to which it is passed by a conveyor system.

3,621,985
CONVEYOR BELT INSTALLATION

Hans Karl Pelzer, Krefeld, Germany, assignor to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed July 31, 1969, Ser. No. 846,374
Claims priority, application Germany, Aug. 3, 1968, P 17 56 927.6
Int. Cl. B65g *15/08*
U.S. Cl. 198—192 4 Claims

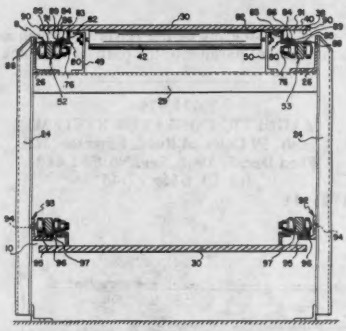


A conveyor belt assembly with garland roller sets in which the garland joints are so designed that at a standstill of the conveyor belt, the lateral rollers of each garland roller set under the influence of gravity are inclined relative to the direction of movement of the conveyor belt, the said incline being at least nearly eliminated by the frictional engagement of the belt with the rollers during the normal conveying speed of said belt.

3,621,986
CONVEYOR APPARATUS

Joseph H. Webb, 26957 Russell Road, and Donald G. Stiles, 29682 West Oakland Road, both of Bay Village, Ohio

Filed May 5, 1969, Ser. No. 821,885
Int. Cl. B65g *15/30*
U.S. Cl. 198—195 8 Claims

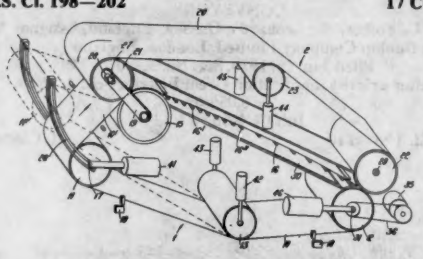


A conveyor apparatus including a frame, a conveyor mounted on the frame and a drive mechanism for moving the conveyor on the frame. The conveyor includes an endless conveyor member having a plurality of slat members disposed in side-by-side relation which provide inner and outer reach portions, a plurality of rotatable members mounted on the frame to rollingly support the outer reach portion and a slide support member is carried by the frame for slidably supporting the inner reach portion. The drive mechanism includes one or more flexible, endless drive elements operably connected to the outer reach portion for moving the conveyor member with respect to the frame.

3,621,987
SYSTEM FOR GUIDING THE TRAVEL OF A BELT SUPPORTED BY A ROTARY DRUM

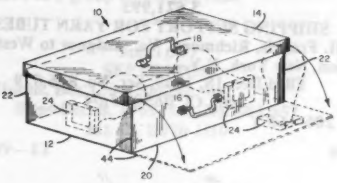
Robert E. Sherwood, Cincinnati, Ohio, assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Aug. 27, 1969, Ser. No. 853,397
Claims priority, application Germany, Sept. 5, 1968, P 17 81 188.0
Int. Cl. B65g *15/62*
U.S. Cl. 198—202 17 Claims



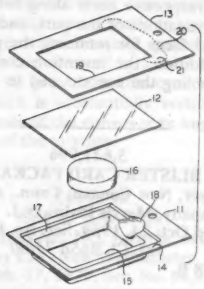
A guidance system for a belt running over a roller or drum in which misalignment of the belt causes a signal which tilts the axis of a supporting drum in a direction to correct the belt alignment. Means are provided for interrupting the signal whereby the drum axis returns to its rest position before reactuation by the signal whereby realignment of the belt is produced by a repetitive pulsation like tilting of the drum axis increasing the tension at one edge of the belt.

3,621,988
WIG CASE
Erika Songer, 4719 South Columbia Place, Tulsa, Okla., and Renee F. Neuwald, 53 East 75th St., New York, N.Y.
Filed Apr. 6, 1970, Ser. No. 25,788
Int. Cl. A45c *11/02*
U.S. Cl. 206—8 20 Claims



A carrying case or container for storing and transporting a plurality of wigs, wiglets and the like, on blocks or headforms in a manner for maintaining the wigs in a natural array. The expensive "set" of the wigs, wiglets, and the like are maintained in good order during transportation and storage.

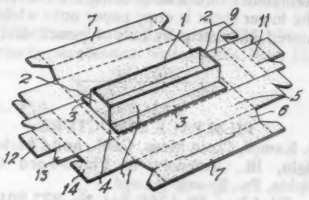
3,621,989
PILFER RESISTANT RECLOSABLE CONTAINER
Jack E. Pregont, Prent Corporation 631 Warding St., Janesville, Wis.
Filed Mar. 9, 1970, Ser. No. 17,495
Int. Cl. B65d *25/00*
U.S. Cl. 206—45.31 3 Claims



A pilfer-resistant reclosable container comprises a boxlike body member having a peripheral lip provided with a shallow recess which supports the edges of a transparent flat rectangular lid. A flat card provided with a central rectangular window is bonded to the lip of the body member and overlaps the edges of the lid to hold the latter in place. A portion of the card is adapted to be torn away so that the corresponding end of the lid can be grasped and bent through the resulting opening to enable the lid to be slid open.

3,621,990
FOLDING DISPLAY RECEPTACLE
Harold E. Hartman, 6 Chestnut Hill Place, Glen Ridge, N.J.
Filed Apr. 30, 1970, Ser. No. 33,254
Int. Cl. B65d *5/50*
U.S. Cl. 206—45.14 4 Claims

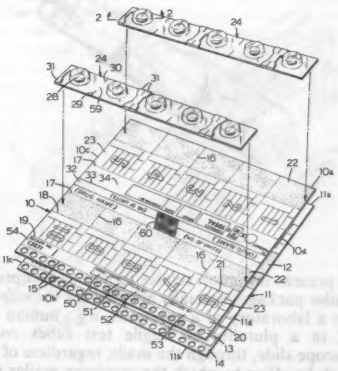
A folding paper receptacle for displaying an article comprises a blank composed of a plurality of connected sections one of which forms the bottom wall of the receptacle on which is set a reinforcing frame that has fixedly connected side and end panels of such dimensions as to provide a space between them of a length and width approximately corresponding to the length and width of said article. The other sections form the side and end walls and are folded upwardly from said bottom wall and inwardly over the corresponding side panels and end panels of said frame providing each sidewall and each end wall with an inner portion and an outer portion inside and outside the corresponding panel of said frame and connected by a top portion providing an opening for display of the article and said sidewalls and end walls are formed to interlock for enclosing and holding said walls and frame against relative displacement.



3,621,991
PACKAGE FOR GARMENTS
David Alan Richter, 136 Adams St., Lexington, Mass.
Filed Nov. 18, 1969, Ser. No. 877,800
Int. Cl. B65d *85/18*
U.S. Cl. 206—46 AP 1 Claim

A package for garments is formed essentially of two sheets of pliant material which are rolled into a tube so as to fit within a sleeve having a handle for carrying the package. In order to assemble the package, each of the sheets has attached thereto means adapted to be grasped, all of which lie substantially in the same plane as that of the sheet to which it is attached. In this way the package is very compact after assembly and the materials for making the package are very compact prior to assembly. The apparatus for assembling the package coacts with the means adapted to be grasped in such a way that the sheets of pliant material are readily rolled into tubular form with the garment therebetween, thus permitting rapid packaging of garments for use in retail stores or in wholesale stores, for use in transportation of such garments and for related uses.

3,621,992
COMPOSITE-PACKAGING AND CONTROL SYSTEM
John D. Osborne, Richmond Hill, Ontario, and Gordon W. Holmes, Port Credit, Ontario, both of Canada, assignors to Dominion Paper Box Company Limited, Toronto, Ontario, Canada
Filed Apr. 30, 1970, Ser. No. 33,249
Int. Cl. B65d *85/42, 85/56*
U.S. Cl. 206—56 AB 16 Claims



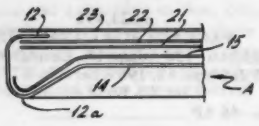
A composite-packaging and control system for articles or compositions of matter and particularly suited for drugs in-

cludes at least upper and lower sheets secured together in overlying relationship. At least a part of the upper sheet is separated into removable strips by lines of weakness, and a packaged drug, for example, is fastened to a part of each strip, the remainder of the strip being for the entry of information. The lower sheet is copy paper onto which any information entered on a strip by pen or pencil, for example, is copied.

3,621,993
FILM PACK STRUCTURE

Richard S. Kampf, Costa Mesa, Calif., and Charles F. Stevenson, Elgin, Ill., assignors to Philco-Ford Corporation, Philadelphia, Pa., by said Kampf

Filed Nov. 19, 1969, Ser. No. 877,901
Int. Cl. B65d *17/16, 85/00;* **G03c** *3/00*
U.S. Cl. 206—62 R **8 Claims**

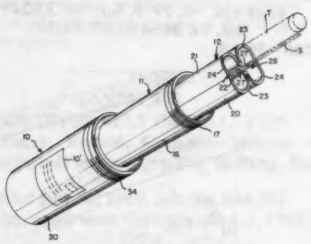


A dental X-ray film pack structure comprising film and an envelope that facilitates removal of the film from the envelope by mechanical means. A film pack is constructed and arranged for support upon a forked blade arranged for insertion into a portion of the envelope adjacent the film-containing portion so that the film may be forced past a closure flap and from the envelope by means of a pusher blade moving between the forked blades. The envelope is mechanically weakened along the line of movement of the pusher blade so that the envelope will tear readily while the film is forced out intact, for delivery to suitable processing means.

3,621,994
LABORATORY SPECIMEN MAILER

Paul A. Brown, Portsmouth, N.H., assignor to Metropolitan Pathology Laboratory, Inc., Teaneck, N.J.

Filed Nov. 25, 1969, Ser. No. 879,735
Int. Cl. B65d *71/00, 81/06*
U.S. Cl. 206—65 R **8 Claims**

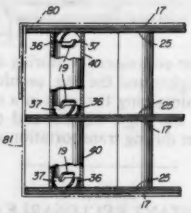


The present invention relates to new and improved, reusable mailer packages specially adapted for the safe transportation to a laboratory of a specimen, e.g., human blood, contained in a plurality of fragile test tubes and a fragile microscope slide, through the mails, regardless of the severity of rough handling to which the specimen mailer may be subjected. The complete mailer assembly comprises nested, elongated cylindrical plastic cups both of which are closed by end caps. The nested cups are disposed and maintained in a predetermined spaced relationship to one another by a cushioning disc spacer fabricated of a suitable resilient material such as expanded plastic foam. Disposed within the inner cylindrical plastic cup is a plastic divider structure which divides the inner cup into four test tube compartments and one microscope slide compartment.

3,621,995
SHIPPING SUPPORT FOR YARN TUBES

Robert H. Francis, Richmond, Va., assignor to Westvaco Corporation, New York, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,079
Int. Cl. B65d *85/04*
U.S. Cl. 206—65 Y **8 Claims**

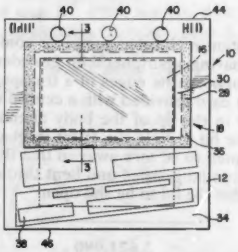


The shipping support of this invention comprises a two-part corrugated board pad containing integral tabs die-cut from each part to form a plurality of interlocking post elements for supporting and positioning tubes of yarn in a spaced relationship during shipment. Each of the tabs are attached to their respective parts along fold lines lying at an angle to the corrugations of the part, and they each include locking slots and faces for retaining the posts in an upright condition. In addition, the invention comprises a novel jig frame for assembling the support pad to its tube supporting condition.

3,621,996
BLISTER CARD PACKAGE

Anthony W. Seyer, New Canaan, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

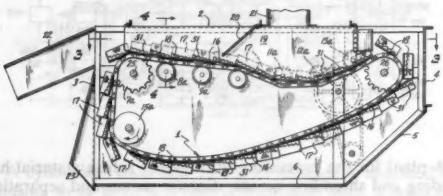
Filed Oct. 24, 1969, Ser. No. 869,012
Int. Cl. B65d *73/00*
U.S. Cl. 206—78 B **1 Claim**



A blister-type card package designed for display on a peg rack, which package is characterized by a flat base-forming card member having an aperture in which a product is positioned, the product being enclosed between a pair of traylike transparent blister-forming members which have peripheral flanges sealed in overlying relation to portions of the base-forming card which extend about the aperture, the one blister member being seated in the aperture so that a portion of the product projects beyond the backface of the card and the other blister member covering a portion of the product which projects beyond the front face of the card. The packages are supplied for mounting on a peg rack with the

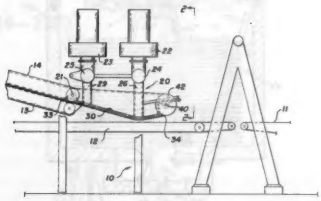
product accommodating apertures in alternate packages being offset so that the projecting front and back portions of the product in adjacent packages are in nonaligned relation when hung on a peg, enabling a degree of nesting which results in a greater number of packages being accommodated on a peg, and also enabling a plurality of the packages to be packed in nested relation in a shipping container with provision for opening the container so that the packages may be readily placed as a group on the peg rack.

3,621,997
SEPARATOR
Oliver K. Hobbs, Box 1306, Suffolk, Va.
Filed Dec. 8, 1969, Ser. No. 882,857
Int. Cl. B07b *1/10*
U.S. Cl. 209—12 **6 Claims**



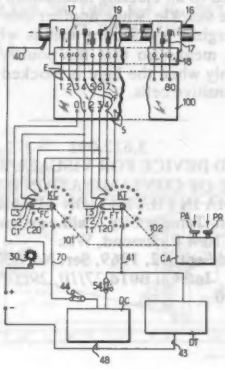
A device for separating bark useful for mulching around plants from undesirable materials mixed therewith such as wood chips, sticks, sawdust and slivers of the cambium layer of a log has an endless conveyor composed essentially of a series of perforated sheet metal sections rigidly secured only at their leading edges to horizontally spaced sprocket chains. The sprocket chains are diverted by idler wheels from a normal elliptical path to provide a conveyor surface having a portion thereof which is substantially vertical and to cause hinging of the sections of the conveyor to improve separation of the components of the mixture.

3,621,998
SHEET GRADER
Victor Prochaska, Haus No. 103, Austria, assignor to Durand Machine Company Ltd., New Westminster, B.C., Canada
Filed Feb. 27, 1970, Ser. No. 14,929
Int. Cl. B07b *13/04*
U.S. Cl. 209—82 **9 Claims**



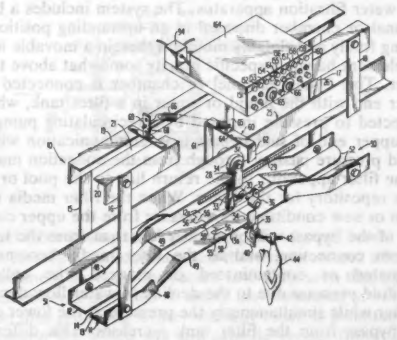
Apparatus for grading sheets such as plywood veneers, according to size in which the sheets are conveyed past a suction head which has two ducts and a channel between them, the ducts being spaced apart in the direction of travel of the sheets. The arrangement is such that oversized sheets cover, at all times while beneath the grader, at least a part of one of the ducts whereas undersize sheets can be covering only the channel so that the oversize sheets are conveyed past the grader while the undersize sheets fall from it.

3,621,999
ARRANGEMENT FOR THE SELECTION OF COLUMNS OF RECORD CARDS
Hilrich J. M. Venker, Heemstede, Netherlands, assignor to Bull General Electric (Nederland) N. V., Amsterdam, Netherlands
Filed Nov. 10, 1969, Ser. No. 875,104
Claims priority, application Netherlands, Nov. 18, 1968, 6816432
Int. Cl. B07c *5/00*
U.S. Cl. 209—110 **7 Claims**



The invention concerns, in a record-card-sorting machine comprising a sorting device and a device for checking the sorting, a column-selecting device comprising a connection panel combined with a system of two coupled stepping switches, the arrangement being such that the members for exploring the card columns are connected on the one hand to the sorting device through the connection panel and one of the said stepping switches, in order to permit sorting of a series of cards in accordance with the data situated in one of their columns, and on the other hand to the device for checking the sorting, through the connection panel and the other stepping switch, in order to permit simultaneous checking that the data situated in the column which has served for the sorting during the preceding passage do in fact succeed one another in a predetermined order.

3,622,000
POULTRY SELECTOR SYSTEM
Hewie D. McClenny, Route 1, Oneonta, Ala.
Filed Dec. 1, 1969, Ser. No. 881,249
Int. Cl. B07c *5/20*
U.S. Cl. 209—121 **6 Claims**



A poultry selector system for removing poultry within a predetermined weight range from a conveyor line. The

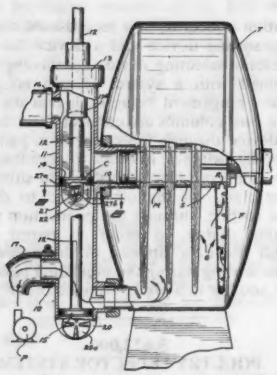
shackles of a poultry conveyor are moved across a supporting track, and a moveable section of the supporting track yields under the weight of each shackle as the shackle travels along the track. The moveable track section is hingedly connected across the stationary track section and opens in a downward direction when a poultry-carrying shackle moves across it. The moveable track section then forms an inclined ramp and guides the shackle back onto the stationary track. An element moveable with the track section is positioned adjacent a line of photosensitive cells and arranged to sequentially block the light entering the photosensitive cells when moving with the moveable track section. One of the photosensitive cells is connected to an ejecting mechanism for removing the poultry from the shackle, while another one of the photosensititve cells energizes a disabling means which disables the poultry-ejecting means, so that the poultry is ejected from the conveyor only when the light is blocked from the first of the two photosensitive cells.

3,622,001

SYSTEM AND DEVICE FOR VISUALLY INDICATING THE DEGREE OF CONTAMINATION OF THE FILTER MEDIA IN FILTRATION APPARATUS

William A. Oden, Temple City, Calif., assignor to Domain Industries, Inc., New Richmond, Wis.

Filed Sept. 12, 1969, Ser. No. 857,367
Int. Cl. B01d *27/10, 29/34*
U.S. Cl. 210—90 **4 Claims**



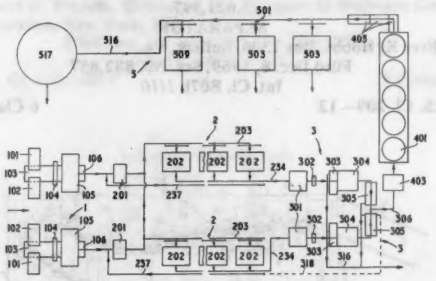
This device provides a visual media for instantly determining the then-filtering capacity of the filter elements or media in a water filtration apparatus. The system includes a bypass channel or chamber disposed in an upstanding position and having freely and slidably mounted therein a movable indicator element having a specific gravity somewhat above that of water. This bypass channel or chamber is connected at its lower end with the liquid or water in a filter tank, which is subjected to pressure imposed by a recirculating pump, and the upper end of said bypass is in communication with the liquid pressure passing through from the collection manifold of the filter apparatus to the return line to the pool or other main repository for the water. When the filter media is in a clean or new condition, the pressure from the upper connection of the bypass will be slightly less than from the tank or bottom connection, and as the filter media becomes impregnated or contaminated or clogged, the collection manifold pressure due to the decline of water flow decreases further while simultaneously the pressure at the lower end of the bypass from the filter tank increases. This differential pressure is responsible for an upwardly escape velocity in the bypass chamber, causing the indicator element proper to rise in a direct relationship to the degree of contamination or clogging.

3,622,002

PLANT FOR PROCESSING OF REFUSE MATERIAL

William Watson Kirk, The Saddlers, Wooton, Quatt, near Bridgnorth, England

Filed May 16, 1968, Ser. No. 735,490
Claims priority, application Great Britain, June 1, 1967, 25,228/67
Int. Cl. B01d *50/00*
U.S. Cl. 210—105 **13 Claims**



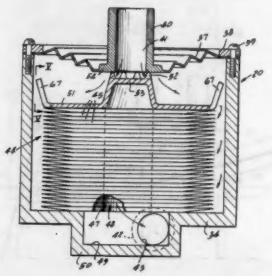
A plant for the processing of domestic refuse material has feeding and shredding means, digester means and separating and grinding means. The feeding and shredding means shred the entire refuse material and feed it without sorting to the digester means. The digester means include at least one digester having a plurality of open cells provided with air and water to support aerobic degradation of the refuse material. Control mean regulate the passage of the material from cell to cell and also regulate the supply of water to the material in the cells to control the moisture content of the material leaving the digester. The separating and grinding means are located after the digester means and are used to remove metal objects form the degraded material and thereupon to reduce the degraded material to fine pulverulent form.

3,622,003

FILTER FOR A WASHING APPLIANCE

James I. Czech, Stevensville, and Clark I. Platt, Benton Harbor, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 3, 1970, Ser. No. 16,108
Int. Cl. B01d *29/38*
U.S. Cl. 210—108 **18 Claims**



A filter or trap, especially adapted for removing lint and particulate material from wash water in automatic domestic washing machines having wash and drain cycles, comprises a self-contained unit with a stack of centrally apertured filter disks within a housing having a lower end filtering cycle suction outlet communicating with the chamber defined within the stack by the disk apertures. Fluid to be filtered such as wash water delivered to the housing is forced to pass between the disks of the stack to the aperture chamber. To flush the filter, flushing fluid such as water is introduced through the

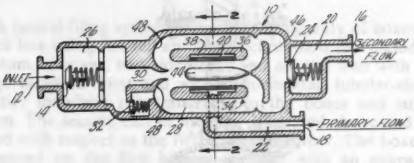
outlet, now serving as a flushing fluid inlet, into the disk stack chamber which causes the disks to separate and be agitated and flush clear of filtered material which is carried off to drain through the inlet, now serving as a drain outlet, through which fluid to be filtered is normally delivered to the housing.

3,622,004

RECIRCULATING WASH FLOW FILTER

Gene A. Meyer, West Simsbury, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Nov. 6, 1969, Ser. No. 874,624
Int. Cl. B01d 35/22, 29/42
U.S. Cl. 210—134 9 Claims



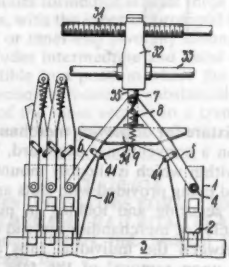
A cylindrical wash flow fuel filter element is mounted in a housing so as to form a flow recirculation path, a portion of which is parallel to the surface of the filter. Fluid enters an inlet and passes through a jet inducer nozzle which accelerates the fluid inducing a flow in the recirculation path. Contaminants are washed away from the surface of the filter and held in suspension by the wash flow in the recirculation path. One of two outlets receives filtered fluid which passes through the filter element. The other outlet communicates with the recirculation path via a pressure responsive shutoff valve. An auxiliary check valve limits the pressure drop across the jet inducer nozzle for high inlet flow conditions. When the pressure responsive shutoff valve is closed, filtered flow equal to that entering the jet inducer emerges radially from the wash flow filter and the contaminant is, for a limited time, stored in the recirculating wash flow path. When the pressure responsive shutoff valve is opened the wash flow passes through the other outlet thereby discharging the stored suspended contaminants.

3,622,005

APPARATUS FOR AUTOMATICALLY SHAKING FILTER CAKE IN A FILTER PRESS

Ken-Ichiro Kurita, Suita, Osaka, Japan, assignor to Kurita Machinery Manufacturing Company, Limited, Nishiku, Osaka, Japan

Filed Dec. 3, 1968, Ser. No. 780,724
Claims priority, application Japan, Nov. 5, 1968, 43/80769
Int. Cl. B01d 25/32
U.S. Cl. 210—225 6 Claims



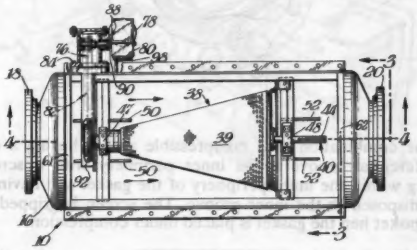
A vibrating means above filter plates is adapted to be moved above a suspended rod hung with a filter cloth which is attached to filter plates. When the plates are moved one by one after the filtering operation, the rod is brought into vibration in operative relationship with the vibration of the filter plates so as to effect the vibration of the cloth when it is brought into an open position between a plate which has been moved and a remaining plate. The filter cake can be shaken from the cloth by the vibration.

3,622,006

SELF-CLEANING STRAINER FOR PIPELINE

Marc M. Brunner, 1277 Dogwood Lane, Huntingdon Valley, Pa.

Filed Oct. 20, 1969, Ser. No. 867,680
Int. Cl. B01d 33/02
U.S. Cl. 210—355 17 Claims



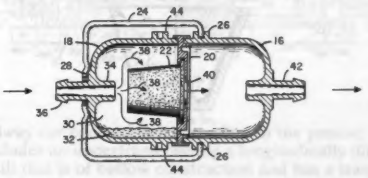
A self-cleaning strainer for a relatively large pipeline has a conical straining element longitudinally mounted in a casing in line with the flow through the pipeline. The straining element is slowly rotated past an adjacent collecting trough to wash debris into it. The straining element can be rotated by various drive means, from either its front or back end, which may utilize a motor, a transmission (such as chain and sprocket or gears) or a propeller rotated by the flow of water through the casing. The propeller may be connected to the straining element through a transmission which allows it to rotate relatively fast while the filter element rotates at a relatively slower speed.

3,622,007

FUEL FILTER

James S. Pappathatos, Burnsville, Minn., assignor to General Metal Products Corp.

Filed July 24, 1969, Ser. No. 844,590
Int. Cl. B01d 35/20
U.S. Cl. 210—445 2 Claims



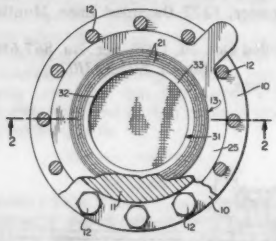
A fuel filter having two easily gripped sediment bowls with a filter element and seal disposed therebetween and wherein each sediment bowl is constructed internally such that a sediment chamber is provided in either the horizontal or vertical position thus providing a filter element which is mountable in any position yet which will still provide proper filtering action. Further, with the use of an adapter, either bowl may be directly attached to a carburetor, thus allowing the novel filter to be used as either an incline filter or a carburetor attached filter.

3,622,008

COMPRESSION GASKET AND SCREEN ASSEMBLY

Nicholas A. Mucci, Pennsauken; John W. Rhine, Turnersville, and Harry J. Wonderland, Lakehurst, all of N.J., assignors to Flexitallic Gasket Company Inc., Camden, N.J.

Filed Dec. 22, 1969, Ser. No. 886,891
Int. Cl. B01d 27/00
U.S. Cl. 210—445 3 Claims



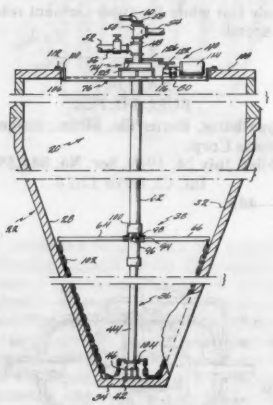
The combination of a compressible gasket having a circumferential groove in its inner periphery with a screen fitting within the inner periphery of the gasket and having a rim disposed in the inner groove. The screen is gripped by the gasket hen the gasket is placed under compression.

3,622,009

MECHANICAL SLUDGE COLLECTOR AND THICKENER

Carl J. Bordner, Rockville, Md., assignor to Defiance Company, Tallevast, Fla., A division of Davis Industries, Inc. Thomasville, Ga.

Filed Oct. 17, 1969, Ser. No. 867,268
Int. Cl. B01d 21/06, 21/18
U.S. Cl. 210—528 8 Claims



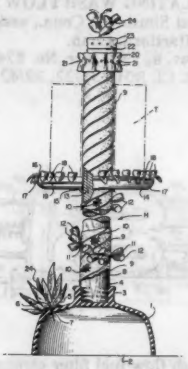
A sludge collector for settling tanks and the like comprises an eductor pipe with a lift pump airline therein and a wiper arm assembly rotatably mounted thereon. The wiper arm assembly comprises normally radially extending wiper arms having chains depending from the outer ends thereof to scrape the walls of the settling tank so that the walls of the settling tank so that the sludge can be removed from the tank by the eductor pipe. A drive means is provided to reciprocate the wiper arms through a specific arc and the arms can be pivoted from their normally horizontal operating position to a substantially vertical position to facilitate removal of the wiper arm assembly from the tank.

3,622,010

PORTABLE ORNAMENTAL TISSUE HOLDER

Marjorie Genevera Renelt, 4321 N. 39th St., Phoenix, Ariz.

Filed Sept. 4, 1969, Ser. No. 855,336
Int. Cl. A47k 10/16; A47f 7/17; B65h 19/02
U.S. Cl. 211—13 R 5 Claims



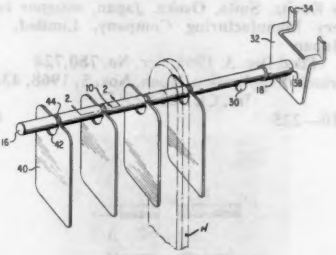
A portable ornamental tissue holder for storing tubular articles such as spare rolls of toilet paper and the like comprising a base supporting an upright standard having affixed adjacent the upper end thereof a tray upon which the spare roll of paper or the like is supported with an end portion of the standard extending through the hollow center of the roll of paper or the like, and means on the outer end of said standard for preventing accidental removal of the stored article therefrom.

3,622,011

THEFT-PROOF DISPLAY FIXTURE

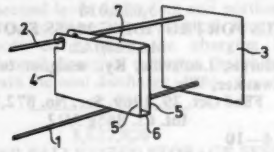
Gerald A. Snow, 106 7th Ave. N.E., Independence, Iowa

Filed Apr. 17, 1970, Ser. No. 29,459
Int. Cl. A47f 7/00
U.S. Cl. 211—59 7 Claims



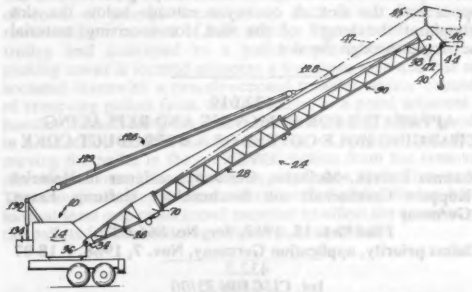
A theft-proof fixture for displaying merchandise capable of being mounted on a conventional pegboard. The fixture includes a barrel within which is slidably mounted a lock rod, the barrel and rod being provided with slots and lock fingers, respectively, for securing and locking in place individual, spaced tabs. Articles of merchandise are slid onto the barrel and disposed between the individual tabs and cannot be removed except upon removal of the tabs in front of it. Twist-type tabs are also provided enabling merchandise to be selectively removed from the display fixture without the necessity of removing merchandise and tabs in front of the desired article.

3,622,012
ARRANGEMENT AT LATERAL-FILING SYSTEM
Axel G. Lundgren, Box 176, Norrkoping, Sweden
Filed Apr. 8, 1969, Ser. No. 814,372
Int. Cl. A47f 3/14, 5/00
U.S. Cl. 211—126 1 Claim



A lateral-filing system comprising a plurality of boxes with each box being formed entirely of cardboard and including a bottom, a cover, two sidepieces and an end wall with open edge recesses. First and second horizontal, tubular-shaped, carrier members run transverse to the boxes and support them. The second carrier member is located above and rearward with respect to the first carrier member. The boxes are balanced on the first carrier member with an overweight rearwards. The first carrier engages the bottom of each box and the second carrier member abuts the end wall of each box and engages the open edge recesses.

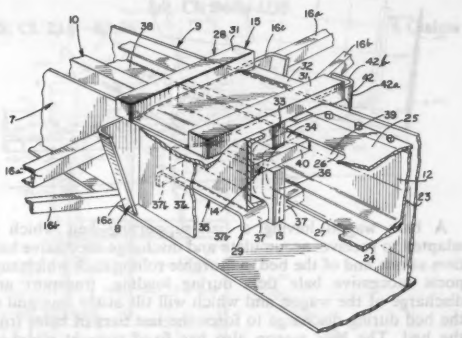
3,622,013
EXTENSIBLE BOOM STRUCTURE
Forrest V. Swanson, Wausau; Gerald P. Lamer, Rothschild, Wis.; Lembit Vaerk, Minneapolis, and John F. Wilkinson, Savage, Minn., assignors to J. I. Case Company
Filed Apr. 29, 1969, Ser. No. 820,121
Int. Cl. B66c 23/06
U.S. Cl. 212—55 4 Claims



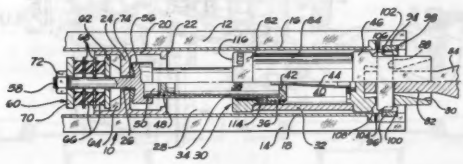
A crane adapted to be mounted on a truck and including an extensible boom formed of at least three telescopically arranged sections, with the inner or proximal section having an open rearward or inner end pivotally mounted on a support. The boom includes intermediate and distal or outer sections that are retractible to a position where the inner end of the intermediate section is located a substantial distance beyond the inner end of the inner section in a transport position to provide a substantially balanced structure.

3,622,014
CUSHION UNIT STOPS FOR A CUSHIONED UNDERFRAME RAILROAD FLAT CAR
Herman A. Aquino, Hobart, Ind., assignor to Pullman Incorporated, Chicago, Ill.
Filed May 20, 1970, Ser. No. 39,684
Int. Cl. B61g 9/12, 9/16
U.S. Cl. 213—8 10 Claims

In a cushioned underframe railroad flat deck car, a fixed through center sill and a sliding insert sill reciprocally disposed within the fixed sill, a pair of upper and lower fore fixed cushion unit key stop means and a pair of upper and lower aft cushion unit key stop means, each of the fixed stop means being attached to the fixed sill with the respective upper fore and aft key stop means including a fore longitudinal member and an aft longitudinal member each suspended from transverse reinforcing means on the top of the fixed sill and each of the lower fixed stop means including antitorque and antibending structure mounting each lower stop means which is in the form of a longitudinally extending lower stop member mountedly attached with the sidewalls of the fixed sill, movable key stop means attached to the cross web of the sliding insert sill and defining an open portion for receiving the cushion unit, said sliding sill key stop means including a pair of longitudinally spaced crossheads on either side of the pocket and attached with a respective portion of the sliding sill cross web, the upper and lower fixed key stop means being vertically spaced from one another to permit horizontal reciprocal movement of the crossheads therebetween, the fixed and movable stop means engaging the cushion unit.



3,622,015
RAILWAY CAR CUSHIONING MECHANISM
Eulas R. Atkinson, Conroe, and Richard G. Powell, Houston, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.
Filed Apr. 8, 1970, Ser. No. 26,475
Int. Cl. B61g 9/14
U.S. Cl. 213—46 13 Claims



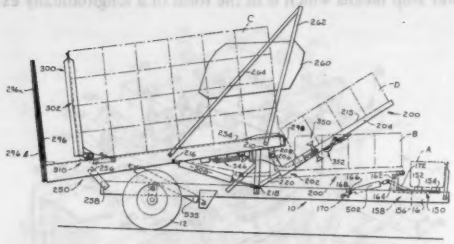
A railway car construction according to the present invention, includes an underframe having a longitudinally disposed center sill that is of hollow construction and has a transverse structural wall spaced from the extremity thereof. An aperture is formed in the transverse structural wall and receives a connecting member of a primary cushioning mechanism disposed within the center sill outwardly of the transverse structural wall. A draft cushioning mechanism is disposed within the center sill inwardly of the transverse structural wall and is secured to the connecting member. The draft cushioning mechanism functions only to cushion draft loads that are applied to the primary cushioning mechanism. Draft stops are retained in assembly with the center sill to limit compression of the draft-cushioning mechanism and to transfer excessive draft forces directly into the center sill structure.

3,622,016

CAM FOR A BALE WAGON ROLLING RACK

Jerry W. Welker, Selma, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed May 29, 1969, Ser. No. 828,888
Int. Cl. B65g *57/28, 59/00*
U.S. Cl. 214—6 B **14 Claims**



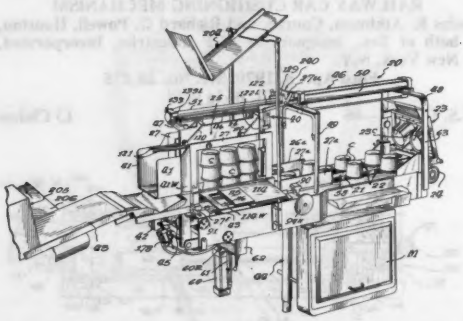
A bale wagon having a bale-supporting bed which is adapted to receive, accumulate and discharge successive bale tiers at one end of the bed, a movable rolling rack which supports successive bale tiers during loading, transport and discharge of the wagon and which will tilt at the one end of the bed during discharge to force the last tiers of bales from the bed. The bale wagon also has fixed support members disposed at the rear of the bed which are laminated for strength and which will support and stabilize the rolling rack when it is moved to its most rearward position on the bed.

3,622,017

CONTROL SYSTEM FOR COLLATING APPARATUS

Martin Meuller, and Bernard Zurhoefer, both of Chicago, Ill., assignors to Owens-Illinois, Inc., Toledo, Ohio

Original application Oct. 23, 1967, Ser. No. 677,098,. Divided and this application Dec. 12, 1969, Ser. No. 889,784
Int. Cl. B65g *57/30*
U.S. Cl. 214—6 BA **7 Claims**



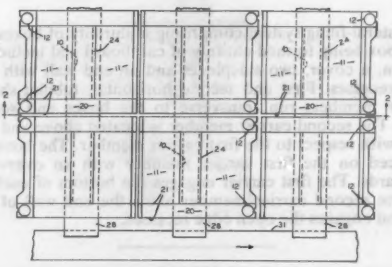
A control unit for an article-collating apparatus having elevator means for shifting a pair of rows of articles from an accumulator position to a storage position, with the control unit including a counter mechanism for each row for determining when a predetermined number of articles are present in each row in the accumulator position and for thereafter actuating the elevator means. Each counter mechanism has a counting ratchet, a row isolating cam and a sequencing cam mounted in ganged relationship on a common shaft, there being a counting element response to each article for actuating the ratchet to step the counter mechanism one position. A row-isolating stop is actuated in response to the presence of a predetermined number of articles in each row, and when the row-isolating stop is actuated, additional articles are prevented from entering the accumulation position. After the predetermined number of articles have accumulated in each row, the elevating mechanism is actuated, and following the completion of the transferring of the rows of articles to the storage position, an actuating mechanism thereby enabling operates each sequencing cam to advance the counter mechanism thereby enabling the counter mechanism to complete a further counting cycle.

3,622,018

APPARATUS FOR PROVIDING MASS FLOW OF STORED MATERIAL

John M. Morris, Louisville, Ky., assignor to Rex Chainbelt Inc., Milwaukee, Wis.

Filed Oct. 29, 1969, Ser. No. 872,227
Int. Cl. B65g *3/12*
U.S. Cl. 214—10 **8 Claims**



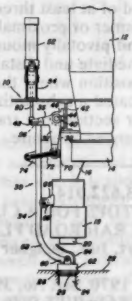
The apparatus is a live bottom for a stockpile, comprising an aligned series of hoppers which are rectangular in plan and are open at the top to receive the base of a stockpile. Each of the aligned hoppers has a bottom discharge opening in the form of a slot extending substantially continuously across the hopper, and has a bottom portion that extends substantially throughout the length of the slot, along at least one side of tee slot, and slopes downward toward the slot. Mechanism is provided for vibrating the hopper to cause material to flow across the downward sloping portion of the hopper into the slot. A conveyor extends below the slot throughout the length of the slot, for receiving material discharged through the slot.

3,622,019

APPARATUS FOR REMOVING AND REPLACING CHARGING HOLE COVERS OF A BYPRODUCT COKE OVEN

Johannes Lorrek, Mulheim, Germany, assignor to Heinrich Koppers Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Oct. 15, 1969, Ser. No. 866,687
Claims priority, application Germany, Nov. 7, 1968, P 18 07 432.3
Int. Cl. C10b *35/00*
U.S. Cl. 214—35 R **10 Claims**



A first lever is pivotally secured to the larry car above the coal discharge chute. A second lever is pivotally connected

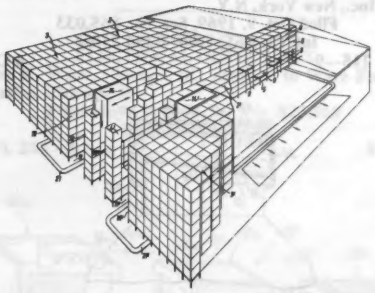
adjacent one end to an arm potion of the first lever. The second lever depends downwardly from the first lever adjacent the coal discharge chute and has an arcuate intermediate portion that positions the second lever other end portion beneath the discharge chute. An electromagnet is secured to the depending end of the second lever and is arranged to magnetically engage the charging hole cover. The pair of levers are so arranged that pivoting of the first lever first moves the second lever depending end portion with the electromagnet secured thereto in a vertical direction to lift the charging hole cover from the charging hole and thereafter in a lateral direction to move the charging hole cover from beneath the coal discharge chute.

3,622,020

MECHANIZED PALLETIZED STORAGE SYSTEMS

Gabor J. Sarvary, "Wellowdown," The Drive Whinwhistle Road, Wellow, near Romsey, England

Filed Feb. 18, 1969, Ser. No. 800,098
Claims priority, application Great Britain, Feb. 20, 1968, 8,123/68
Int. Cl. B65g *1/00*
U.S. Cl. 214—16.4 A **8 Claims**



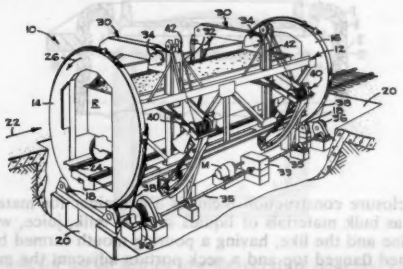
In the present invention there is provided a three-dimensional pallet-storage system wherein goods are stored in pallets at a plurality of different storage levels and in a plurality of rows of storage locations at each level. Pallets are removed from an area of bulk storage by means of a transfer trolley and conveyed to a pallet replenishment area. A picking tower is located adjacent a live store area and has associated therewith a two-directional transfer device capable of removing pallets from the live store, to a point adjacent a handler, transferring the pallet after unloading of the goods in a direction normal to the direction of removal and then moving the pallet in the opposite direction from the removal direction to insert the pallet in an empty row of the live store. The transfer trolley and two-directional transfer device both have at least one cross travel member to effect the transfer of the pallets from one storage location to another.

3,622,021

SAFETY LATCHES FOR ROTARY CAR DUMPER

Donald J. Heath, Lombard; Walter L. Lopatka, Villa Park, and James W. Petrie, Glen Ellyn, all of Ill., assignors to FMC Corporation, San Jose, Calif.

Filed Sept. 19, 1969, Ser. No. 859,419
Int. Cl. B65g *67/54*
U.S. Cl. 214—55 **5 Claims**



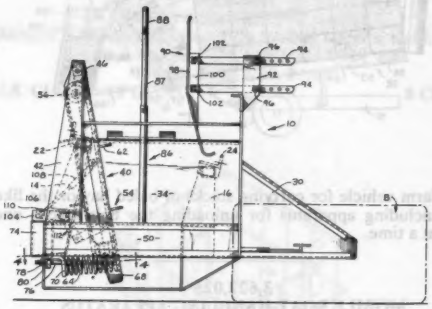
A rotary car dumper which inverts a laden rail car and of the type having clamps to lock it in an invertible cradle is provided with gravity-operated safety latches. In the event the clamp holding mechanisms fail, the safety latches provide positive retention of the clamps so that the car can be safely returned to its upright position.

3,622,022

SPRING BACK BALE LOADER FOR AN AUTOMATIC BALE WAGON

Donald M. Grey, Selma, Calif., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed May 29, 1969, Ser. No. 828,867
Int. Cl. B60p *1/36*
U.S. Cl. 214—83.36 **6 Claims**



A bale loader for use on an automatic bale wagon and adapted to pick up bales from the field and lift them onto the wagon, the loader having a normally outwardly biased rear wall which will yield rearwardly as the wall and the bale come into contact during bale loading to absorb shock loads imparted to the moving loader by the stationary bale.

3,622,023

APPARATUS FOR SETTING GREEN BRICKS IN GAPPED ROWS

Dieter Keck, Laggenbeck, Germany, assignor to C. Keller & Co., Laggenbeck, Germany

Filed May 11, 1970, Ser. No. 36,334
Claims priority, application Germany, May 13, 1969, P 19 24 516.0
Int. Cl. B66b *17/00*
U.S. Cl. 214—89 **7 Claims**

Green molded bricks released from a molding machine are set by a gripper hoist on a slotted platform in continuous columns longitudinal of the slots. Pusher arms pivotally mounted on a carriage under the platform project from the slots and push the columns of molded bricks to a continuous conveyor which travels away from the platform in the direction of slot elongation. The carriage position is sensed by a control cam and switches which operate the drives of the carriage and of the conveyor to produce gaps in the columns of bricks pushed onto the conveyor by the arms. The gapped columns of bricks are transferred by another gripper hoist to a kiln car for firing.

3,622,024

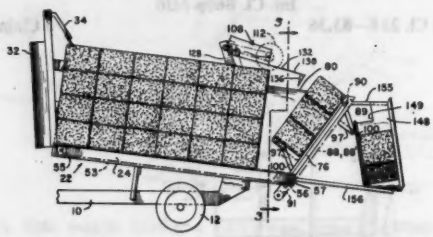
BALE WAGON HAVING SINGLE-BALE-UNLOADING MEANS

Donald M. Grey, Selma; Lee D. Butler, Kingsburg, and Jerry W. Welker, Selma, all of Calif., assignors to Sperry Rand Corporation, New Holland, Pa.

Original application May 16, 1968, Ser. No. 729,686, now Patent No. 3,515,291. Divided and this application Feb. 11, 1970, Ser. No. 010,325

Int. Cl. B65g *59/08*

U.S. Cl. 214—152 5 Claims



A farm vehicle for carrying stacks of baled hay or the like and including apparatus for unloading the bale stacks one bale at a time.

3,622,025

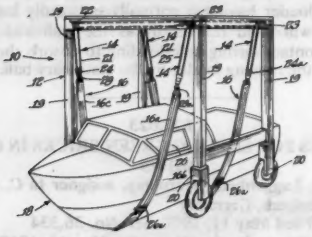
MOBILE BOAT-HANDLING APPARATUS

Arnold C. Petersen, 123 South Ithca Ave., Sturgeon Bay, Wis.

Filed Dec. 22, 1969, Ser. No. 886,841

Int. Cl. B60p *3/10*

U.S. Cl. 214—396 5 Claims



A boat hoist assembly comprises a mobile carriage structure having winch-type hoist assemblies. Slings made up of multiple sections that are connected together by specially arranged pin assemblies are attached to the hoist assemblies forming loops which support the boat.

3,622,026

TRUCK

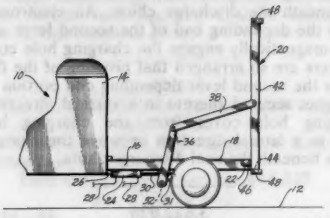
Harold Tornheim, 430 N. Auburn Ave., Sierra Madre, Calif.

Continuation-in-part of application Ser. No. 749,358, Aug., 1968, now Patent No. 3,522,894. This application Sept. 25, 1969, Ser. No. 861,128

Int. Cl. B60p *1/04*

U.S. Cl. 214—501 7 Claims

A pickup truck has an inclinable carriage pivotally mounted on the truck chassis. Power means incline the carriage to substantially vertical position. The including means preferably includes a transverse torsion shaft forward the carriage pivot point and a rotatable by hydraulic cylinders. Linkages between the ends of the torsion shaft and the carriage rotate the carriage in response to the rotation to the shaft. In the vertical position, the carriage can, through a variety of coupling means, take on alternatively a variety of attachments to the truck. Generally, the attachments to the truck are such that they, in turn, in taking on freight for transportation, take advantage of the inclinability of the carriage. One attachment is a track and trolley assembly that takes on freight by the inclination of the carriage. Another



attachment is an overhead rack that, in its inclined position, a man standing on the ground can load.

3,622,027

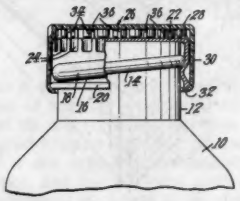
SAFETY BOTTLE CLOSURE

Eino J. Maki, Upper Saddle River, N.J., assignor to Sterling Drug Inc., New York, N.Y.

Filed Oct. 9, 1969, Ser. No. 865,033

Int. Cl. A61j *1/00;* B25d *55/02*

U.S. Cl. 215—9 6 Claims



A closure cap generally of the screw-on type having exterior knurls at the periphery thereof, in combination with a safety overcap having complementary interior knurls and including yieldable, resilient interior filaments or pins maintaining the overcap rotarily unengaged with respect to said closure cap, but said knurls engaging upon the application of downward pressure on the safety overcap relative to the closure cap.

3,622,028

CLOSURE CONSTRUCTION

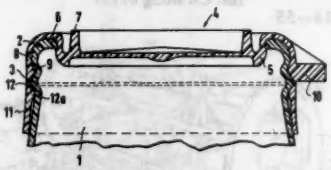
Bernhard Lohrer, Kreuzlingen, Switzerland, assignor to Furstlick Hohensollernsche Huttenverwaltung Laucherthal, Laucherthal, Germany

Filed May 1, 1970, Ser. No. 33,540

Claims priority, application Germany, June 6, 1969, P 19 28 724.2

Int. Cl. B65d *41/22;* A45c */00*

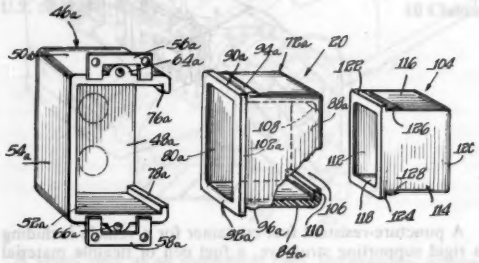
U.S. Cl. 215—41 8 Claims



A closure construction includes a container for materials such as bulk materials or liquids such as milk, juice, water, gasoline and the like, having a pouring mouth formed by an inturned flanged top and a neck portion adjacent the mouth which is characterized by the formation of two closely spaced

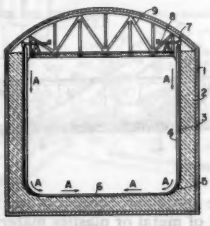
parallel annular protuberances or corrugations. The container mouth is closed by a cover or cap having a depressed central portion which fits into the opening defined by the flanged top and which has an inner portion which is wider than the flange opening to provide a snap fit. The cap also includes a portion extending around the flange and downwardly in the form of a skirt or side portion along the neck of the container. The lowermost portion of the skirt terminates in an apron of annular form having an inwardly extending bead which engages beneath the lowermost protuberance of the exterior of the container. The upper portion of the skirt includes a bead which engages within the groove formed between the two protuberances and the apron is connected to the upper portion by means of a severable tear strip or weakened area. The cap also includes a projection, or ledge, formed around the exterior which may be engaged by the fingers of a person's hand to force the upper portion of the cap off the top of the container while severing the tear strip and leaving the apron intact on the container. When this occurs the apron will drop down further along the exterior wall of the container and when the cap top cover portion is replaced there is a separation between the top cover portion and the apron which shows that the bottle has already been opened.

3,622,029
ELECTRICAL OUTLET BOX
Gordon K. Ware, Chicago, Ill., assignor to Ware Fuse Corporation, Chicago, Ill.
Filed May 12, 1969, Ser. No. 823,569
Int. Cl. H02g *3/08*
U.S. Cl. 220—3.7 **9 Claims**



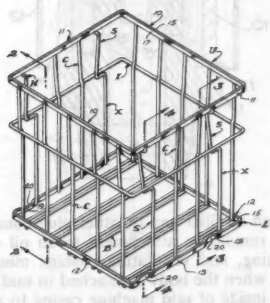
A box including a first portion for receiving electrical outlets, switches, cover plates and the like of standard size and a second portion telescopically associated with the first portion for increasing the interior volume of the box for accommodating electrical wires.

3,622,030
TANK FOR USE IN STORING LOW-TEMPERATURE LIQUEFIED GAS
Katsuro Yamamoto, Tokyo, Japan, assignor to Bridgestone Liquefied Gas Company Limited, Tokyo, Japan
Filed Nov. 13, 1969, Ser. No. 876,288
Claims priority, application Japan, Nov. 15, 1968, 43/83397
Int. Cl. B65d *7/22*
U.S. Cl. 220—10 **1 Claim**



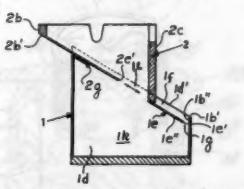
A tank for use in storing low-temperature liquefied gas has an inner vessel composed of a thin film construction suspended from the top wall of an outer vessel, and is constructed so that corrugations vertically formed on the sidewall of said inner vessel may be contracted under the low-temperature loaded condition to approach a smooth configuration in close contact with a heat-insulating layer provided between said outer and inner vessels. At the curved bottom corner of said inner vessel, an increase in length is produced along the outer top part of each corrugation due to the difference in length between the outer top part and inner top part of each corrugation, and said increased length appears as an additional corrugation. To prevent collapse of the additional corrugation, when the vessel is loaded, a part of the heat-insulating layer is eliminated to form a recess for the outer part of the additional corrugation, thereby providing it with a smooth deformation.

3,622,031
STACKING AND NESTING BASKET
Richard E. Wells, 3525 East 16th St., Los Angeles, Calif.
Filed Apr. 9, 1970, Ser. No. 27,024
Int. Cl. B65d *7/20, 21/04*
U.S. Cl. 220—19 **8 Claims**



A wire basketlike container construction having no moving parts and which is such that a plurality of said containers can be selectively engaged in vertical stacked and interengaged nested engagement with each other by varying the relative rotative position of adjacent containers 180°, and a construction where an upper frame of one container is engaged about a lower frame of an upper adjacent container when the containers are stacked whereby the containers are restrained from lateral shifting and displacement.

3,622,032
COMBINATION ASHTRAY CONTAINER DEVICE
Paolo Tilche, Via F. Turati 3, Milan, Italy
Filed July 2, 1969, Ser. No. 838,527
Claims priority, application Italy, July 6, 1968, 131/544
Int. Cl. B65d *1/24, 43/12*
U.S. Cl. 220—20.5 **3 Claims**



A combination ashtray container device comprising an upper member and a lower member slidably disposed on each other, forming jointly there together a substantially cu-

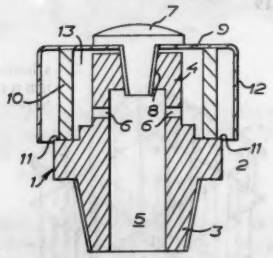
bical body, the two members being slidable along one another along an inclined plane, having openings therein and constituting displaceable portions of said members, the lower member adapted as a container and the upper member alone as an ashtray.

3,622,033

OIL FILLER PLUG WITH VENT PASSAGE

William W. Butler, Hull, England; Harvey Holtby, Hull, England; Graham J. T. Pinder, North Ferriby, England; Sidney J. Moore, Willerby, England, and Bernard Faulkner, deceased, late of Willerby, England (by Violet E. Faulkner, legal representative), assignors to J. H. Fenner & Company Limited, Hull, England

Filed Aug. 27, 1969, Ser. No. 853,390
Claims priority, application Great Britain, Aug. 31, 1968, 41708/68
Int. Cl. B65d 51/16
U.S. Cl. 220—44 6 Claims



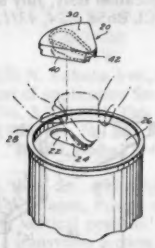
A combined oil filler and breather plug comprising a body adapted for removable attachment to an oil exit port on a machine casing, and ventilating passage means within the body which, when the body is attached to said oil input port, connect the inside of said machine casing to an exit port or ports at the exterior of said body a filter element formed from an interstitial plastics material being located externally of the plug body so as to completely enclose said exit port or ports of the ventilating passage means whereby air passing through the plug to the machine casing must pass through the filter.

3,622,034

CAN-TOP OPENING CLOSURE

Robert S. Lutzker, 40 Franklin Road, Scarsdale, N.Y.; Al Minutillo, 25 Sea Breeze Road, Masapequa, N.Y., and Lawrence D. Lutzker, 40 Franklin Road, Scarsdale, N.Y.

Filed Nov. 4, 1969, Ser. No. 873,841
Int. Cl. B65d 43/10, 39/00, 41/00
U.S. Cl. 220—60 16 Claims



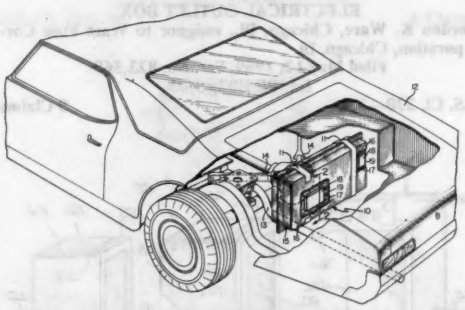
A can-top opening closure is provided with a top wall from which extends downwardly depending legs adapted to engage with the upper surface of the can top adjacent the top opening. Centrally of the top wall is a downwardly depending body having a peripheral shape corresponding to that of the top opening. The body portion is either dimensioned to clear the edge of the can top defining the opening or be in frictional engagement therewith. A sealing lip is spaced downwardly from the top wall, extends outwardly of the body portion and is adapted to be inserted through the top opening and thereafter flexed and biased into sealing engagement with the inner surfaces of the can top adjacent the opening. The closure is provided with surfaces adapted to be engaged for purposes of facilitating the insertion and removal of the closure from the opening. This is also enhanced by the flexible and resilient one-piece, molded construction of the closure. The sealing relationship of the lip is optimized by locating this lip closer to the top wall than the lower edge of the downwardly depending legs which engage with the upper face of the can top thereby creating an upwardly directed biasing force for increasing the sealing pressure between the lip and the inner face of the can top adjacent the opening.

3,622,035

PUNCTURE-RESISTANT FUEL CONTAINER

Charles A. Suter, 130 Hayes Ave., Cuyahoga Falls, Ohio

Filed July 28, 1969, Ser. No. 845,450
Int. Cl. B65d 25/14
U.S. Cl. 220—63 A 6 Claims



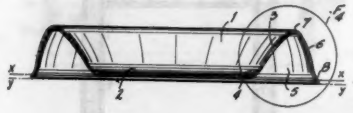
A puncture-resistant fuel container for a vehicle including a rigid supporting structure, a fuel cell of flexible material disposed within the structure, and puncture-resistant members of a nonwoven fibrous material, such as nylon felt, positioned against the cell in at least the puncture prone areas thereof. The puncture-resistant members act to prevent sharp jagged metal objects from penetrating the flexible cell in crash situations.

3,622,036

SUPPORT FOR A DISH

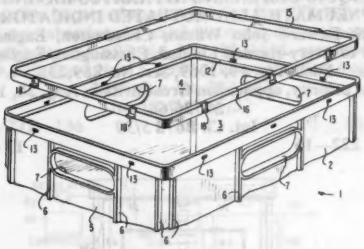
Mathieu Maurits Bongaerts, Bree, Belgium, assignor to Harry Zeiler, Huis ter Heid/Zeist, Netherlands

Filed Sept. 22, 1969, Ser. No. 859,719
Claims priority, application Great Britain, Sept. 30, 1968, 46,359/68
Int. Cl. B65d 7/42
U.S. Cl. 220—70 1 Claim



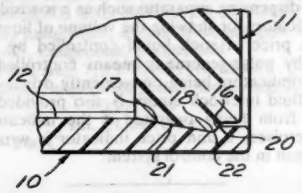
A dish or like container, formed in one piece from a relatively thin sheet of metal or plastics material, said dish being relatively flat and of trapezoidal section, with a peripheral, generally semitoric structure, the opening of which being directed downwardly.

3,622,037
REINFORCED PLASTIC CRATE
Richard F. Gildart, Montebello, Calif., assignor to Rehrig Pacific Company, Los Angeles, Calif.
Filed July 17, 1969, Ser. No. 842,489
Int. Cl. B65d 7/42
U.S. Cl. 220—73 6 Claims



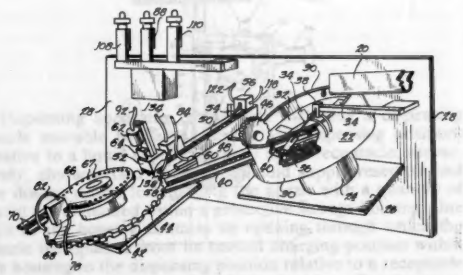
A material handling crate having molded plastic side panels and an open top portion reinforced by an endless steel ring extending around the top of the crate and having an exposed upper surface forming at least a portion of the top surface of the rim of the crate.

3,622,038
SEALED VESSEL
Fred R. Wilhelm, Avon Lake, Ohio, assignor to Airborne Mfg. Co., Cleveland, Ohio
Filed July 17, 1969, Ser. No. 842,658
Int. Cl. B65d 25/54, 53/00
U.S. Cl. 220—82 R 10 Claims



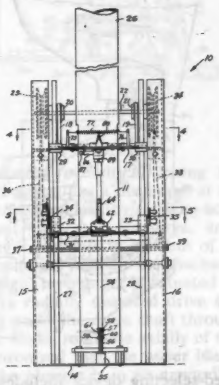
A vessel such as an instrument case, for example, having an opening for access to the interior of the vessel and a closure for the opening adapted to have stressed self-sealing engagement with each other augmented by pressure differentials across the seal to close the vessel against differences in internal and external pressure.

3,622,039
WASHER FEEDER AND ASSEMBLY UNIT
Bert A. Lindstrom, Rockford, Ill., assignor to Elco Industries, Inc., Rockford, Ill.
Filed Sept. 18, 1969, Ser. No. 858,995
Int. Cl. G07f 11/00
U.S. Cl. 221—10 7 Claims



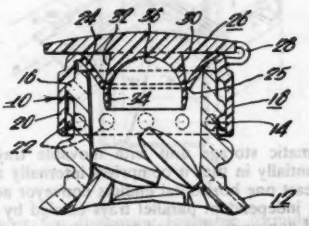
This high-speed apparatus for orientating washers and feeding them to an assembly station for production of captive washer-fastening devices such as captive washer bolts comprises an inclined hopper with a base section having a rotatable annular portion with spaced grooves on the upper rotating surface thereof for receiving and rotationally conveying the washers, and a longitudinally and laterally inclined chute overlying said base section so as to receive washers from the grooves as the grooves align themselves therewith at an upper point in the rotational travel of the grooves, the orientated washers in the chute then being fed to an adjacent mechanism for assembly with bolt blanks, the assembled washers and blanks being conveyed to the starter station of a thread-rolling machine.

3,622,040
CUP-COUNTING AND DISPENSING MACHINE
Theo O. Putnam, Fringer Road, Upperco, Md.
Filed Jan. 9, 1970, Ser. No. 1,762
Int. Cl. B65h 3/32
U.S. Cl. 221—176 11 Claims



A counting and dispensing machine in which nesting cups are stacked on a moveable platform which lowers under the weight of the cups simultaneously raising a counterweight. When the platform reaches its lower most position a second platform is caused to support a new stack of cups at a predetermined cup count above the movable platform while the movable platform is automatically disengaged from the stack of cups permitting them to be dispensed before being returned to an upper position to receive a new stack of cups, by the counterweight. Power for the actuation of the mechanism is derived completely from the weight of the cups with no outside source of power being required. The dispensing and carrying machine is associated with the discharge end of a forming machine and was utilized to provide a predetermined quantity of cups in a single stack for packaging.

3,622,041
CONTAINER CLOSURE
William K. Borsum, and Adolph W. Borsum, both of 521 Pacific Ave., Solana Beach, Calif.
Filed Apr. 21, 1969, Ser. No. 818,025
Int. Cl. B65h 3/60; B65d 5/72
U.S. Cl. 221—202 11 Claims



A container closure comprising a cap portion including a resilient diaphragm carried by the access opening in the con-

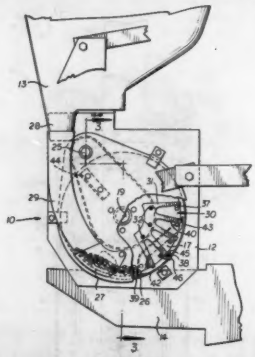
tainer and terminating in an orifice of predetermined configuration and size in the relaxed state to retain articles in the container, a cover member having a dispensing member engageable through said orifice in the diaphragm in the closed position, said dispensing member having a pocket to receive at least one article in the container and being actuatable relative to said cap member to withdraw said one article, and means providing a continuous sealing relationship between said diaphragm and cap portion in the closed position.

3,622,042

PLANTER WITH FLEXIBLE RADIAL SPRING FINGERS FOR SEED SELECTION

Raymond C. Fischer, Hinsdale, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Jan. 12, 1970, Ser. No. 2,011
Int. Cl. A01c *7/04*
U.S. Cl. 221—219 **6 Claims**



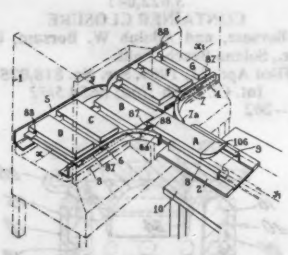
A planter seed-selecting device includes a disc rotatably mounted in a housing with a portion of its periphery received in a seed supply, and having mounted on at least one face thereof radially disposed spring fingers the outer ends of which are engageable with cam means in the housing to cause the fingers to yield axially and receive and, when released, hold a seed therebetween and the face of the disc. After a predetermined rotation of the disc another cam in the housing engages and again causes the fingers to yield axially to release the seed.

3,622,043

AUTOMATIC PRESENTATION STORAGE UNIT WITH MOVEABLE TRAY SYSTEM

Bernard Chotard, 15 rue Georges Legagneux, 72 Le Mans, France

Filed Dec. 30, 1969, Ser. No. 889,184
Int. Cl. B65g *59/00*
U.S. Cl. 221—261 **14 Claims**



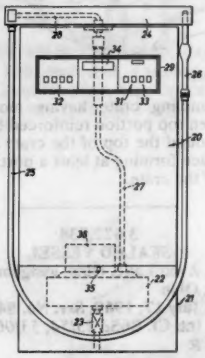
An automatic storage unit with movable trays characterized essentially in that it comprises internally an electric motor, at least one horizontal endless conveyor actuated by said motor, independent parallel trays carried by the upper span of said conveyor, disposed transversely and adapted to carry the objects to be displaced said trays comprising on their lower faces rack means and at their ends coupling members a adapted to cause the mutual coupling of said trays so as to constitute, externally of the storage unit, a continuous row of trays along an output axis extending at right angles to the conveyor's axis.

3,622,044

LIQUID-DISPENSING APPARATUS HAVING PNEUMATICALLY ACTUATED INDICATOR

Frederick Edward John Wilson, Chessington, England, assignor to Avery-Hardoll Limited, Chessington, England

Filed Aug. 19, 1969, Ser. No. 859,235
Claims priority, application Great Britain, Aug. 20, 1968, 39726/68
Int. Cl. B67d *5/30*
U.S. Cl. 222—16 **13 Claims**



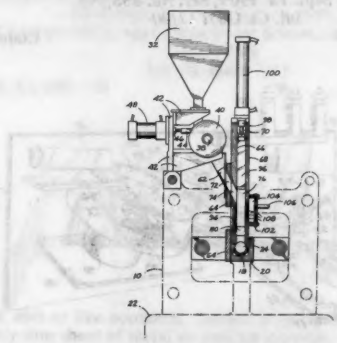
A liquid-dispensing apparatus such as a roadside fuel pump has the indicators for showing the volume of liquid dispensed and/or the price of such liquid controlled by fluid pulses produced by pulse-generating means controlled by a flow meter, the indicators being conveniently driven by fluid jet means. A fluid interlock circuit is also provided to prevent the pump from being operated if the indicators are not properly zeroised, a unit price indicator is wrongly set, or there is a fault in the control system.

3,622,045

APPARATUS FOR FEEDING AND PREHEATING PLASTIC MOLDING RESIN IN PARTICULATE FORM

James E. Delaney, Jr., Hatboro; Robert F. Zecher, Huntingdon Valley, Pa.; William T. LaRose, Sr., Troy, and John F. Trembley, Loudonville, N.Y., assignors to Hull Corporation, Hatboro, Pa. and W. T. LaRose and Associates Inc., Troy, N.Y., part interest to each

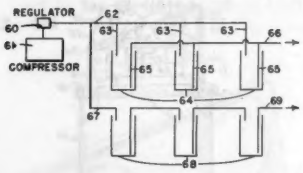
Filed Apr. 22, 1969, Ser. No. 818,327
Int. Cl. B67d *5/16*
U.S. Cl. 222—71 **4 Claims**



Particles of plastic molding resin are metered in predetermined amount from a hopper to a preheat chamber in which

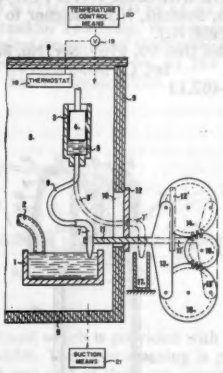
a stuffer blade reciprocates to eject the preheated particles to a transfer tube for delivery to a transfer molding press.

3,622,046
BEVERAGE-DISPENSING APPARATUS HAVING TRANSVERSE AND VERTICAL ROWS OF BOTTLES
Thomas M. Byrne, 6412 Abeson Lane, Madison, Wis.
Continuation-in-part of application Ser. No. 772,995, Nov. 4, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 593,464, Nov. 10, 1966, now Patent No. 3,409,175, dated Nov. 5, 1968. This application Aug. 27, 1969, Ser. No. 857,283
Int. Cl. B67d *5/52*
U.S. Cl. 222—136 **18 Claims**



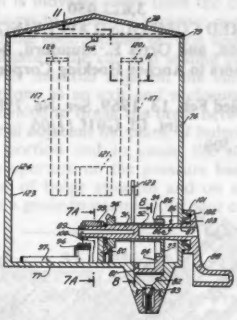
Bottles are supported in transverse and vertical rows clamped to a rack to provide for rapid replacement of bottles, sealed attachment to a dispensing system and introduction of regulated compressed air and withdrawal of contents from the bottles. The bottles may be connected in series or parallel.

3,622,047
LIQUID-DISPENSING APPARATUS INCLUDING A HOUSING AND MOVABLE NOZZLE
Rudolf Oberli, Langenthal, Switzerland, assignor to Greiner Electronic AG, Langenthal, Switzerland
Filed Aug. 7, 1970, Ser. No. 62,057
Claims priority, application Switzerland, Aug. 27, 1969, 12973/69
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 C **6 Claims**



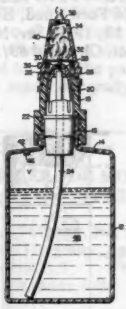
Dispensing apparatus of the type including a dispensing nozzle movable between charging and dispensing positions relative to a liquid supply reservoir and a receptacle, respectively, characterized in that the liquid supply reservoir and the dosage means for charging the nozzle with a quantity of liquid are contained within a protective storage housing. One wall of the housing contains an opening through which the nozzle is displaced from its normal charging position within the housing to the dispensing position relative to a receptacle that is arranged externally of the housing. Temperature-responsive means are provided for maintaining the interior of the housing at a desired storage temperature.

3,622,048
DISPENSER FOR VISCOUS LIQUID AND PASTES
George X. Batlas, 21-26 33rd St., Astoria, N.Y.
Continuation-in-part of application Ser. No. 867,138, Oct. 17, 1969, now abandoned. This application Sept. 2, 1970, Ser. No. 068,816
Int. Cl. B67d *5/06*
U.S. Cl. 222—181 **19 Claims**



A vertically disposed cylindrical casing for storage of viscous liquids and pastes has a discharge at the lower edge portion thereof normally sealed by a spring-actuated valve, a recess in alignment with said discharge, and a vertically reciprocating plunger movable in and out of said recess for force feeding of material through the discharge against the action of said spring. The plunger is actuated through a cam means carried by a radially disposed drive shaft extending through the casing wall. The drive shaft through bevel gears also drives a wiper blade, rotatable axially of the casing, with the drive so synchronized that the wiper blade passes over the recess when the plunger is in an upwardly reciprocated position. The drive shaft can pass over said recess, in which event the cam engages a follower which is an integral extension of said plunger, or the drive shaft can be disposed perpendicularly to such first mentioned orientation, in which event the cam engages a follower pivotally supported in the casing and operatively engaging said plunger.

3,622,049
DISPENSING SYSTEM
Robert E. Thompson, Maplewood, N.J., assignor to Shering Corporation, Bloomfield, N.J.
Filed May 5, 1969, Ser. No. 821,572The portion of the term of the patent subsequent to Oct. 10, 1984, has been disclaimed.
Int. Cl. B67d *5/58*
U.S. Cl. 222—190 **1 Claim**



A dispenser for dispensing foamable formulations. The liquid is placed in the container portion and exits through a nozzle in the form of a foam. When the walls of the container

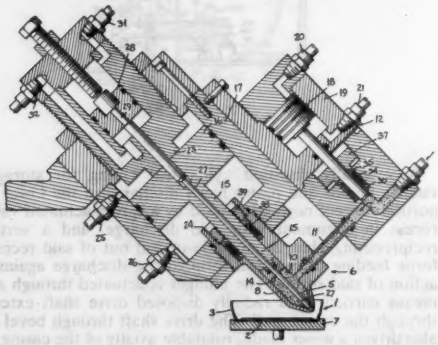
are squeezed, or when a pressurized gas is introduced, air within it and also the liquid is forced upwardly through a porous member and is mixed, thereby producing foam. After each dose or charge has been dispensed, replacement air enters through a vent, with that portion of the foam which is in the nozzle acting as a valve to prevent reentry of the foam into the interior of the dispenser.

3,622,050

METERED COMPOUND APPLYING NOZZLE

Daniel D. Acton, and Orris E. Mumford, both of Lancaster, Ohio, assignors to Anchor Hocking Corporation, Lancaster, Ohio

Filed Feb. 13, 1969, Ser. No. 798,892
Int. Cl. G01f *11/06*
U.S. Cl. 222—309 **4 Claims**



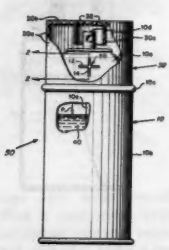
A nozzle for injecting liquid into articles and particularly for injecting relatively viscous liquids including plastisols or other flowable compounds such as are used to form gaskets in hollow closure shells. The nozzle injects a precisely predetermined volume of flowable material at a controlled rate so that a gasket ring or other element may be formed with a precise degree of overlap. The volume is controlled by admitting a predetermined amount of the liquid compound into a charge chamber which is then closed off from the compound source. This charge is then injected through the nozzle orifice by the opening of a control needle a predetermined amount while the compound is forced through the orifice by a discharge piston as it displaces the predetermined volume of compound in the charge chamber.

3,622,051

AEROSOL CAN WITH OVERPRESSURE VENTING AND ENTRAPPING MEANS

Louis Benson, 1075 Old Ford Road, Huntingdon Valley, Pa.

Filed Jan. 13, 1970, Ser. No. 2,522
Int. Cl. B65d *83/14*
U.S. Cl. 222—397 **3 Claims**



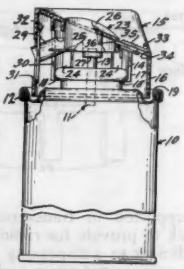
The present invention relates to an improvement in pressurized aerosol-dispensing containers, wherein a pressure-responsive overpressure relief means is strategically located as a structural part of the pressurized envelope and is combined with entrapping means thereon for restraining the violent escape of the dispensed product in the event that overpressure occurs.

3,622,052

CHILDPROOF DISPENSING VALVE ACTUATOR FOR AN AEROSOL CAN

Peter P. Gach, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed Dec. 1, 1969, Ser. No. 881,084
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.11 **3 Claims**



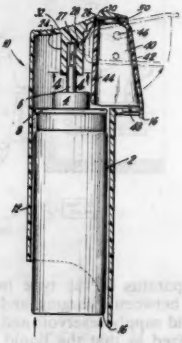
A childproof dispensing valve actuator for an aerosol can. The valve actuator fits on the end of a vertical, tubular valve stem. The valve actuator body protrudes upwardly through a central opening in a can cover and has a horizontal nozzle which aligns with an opening in the side of the cover. The valve is actuated by pressing the actuator body downwardly. A locking slide is carried by a part of the cover adjacent the actuator body and is movable between an "open" position not engaging the actuator body and a "locked" position in which the slide engages in a slot in the actuator body for preventing it from being depressed to actuate the valve.

3,622,053

AEROSOL INHALER WITH FLIP-UP NOZZLE

John V. Ryden, Summit, N.J., assignor to Schering Corporation, Bloomfield, N.J.

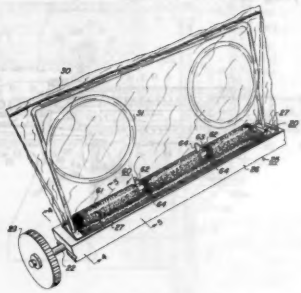
Filed Dec. 10, 1969, Ser. No. 883,752
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.11 **5 Claims**



A dispenser for dispensing a composition confined, under pressure, in a container having a valve which, when pushed downward toward the container, opens and dispenses the composition, the dispenser comprising a housing having a skirt open at its lower end for receiving the container and a dispensing head, the dispensing head having a valve activator

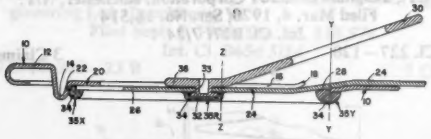
therein including a boss having an opening for engaging and gripping the valve stem on the container for maintaining the container in the dispenser and a nozzle hood pivotally mounted on the dispensing head for receiving a metered amount of medication from the container and mixing such metered amount of medication with the air drawn through such hood by the patient, the nozzle hood including means, when said nozzle hood is closed, for abutting said container and for preventing said container from being moved axially of said dispenser for opening said valve.

3,622,054
TONER DISPENSER IMPROVEMENT
James R. Davidson, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.
Filed June 4, 1969, Ser. No. 830,237
Int. Cl. G01f *11/20*
U.S. Cl. 222—414 **4 Claims**



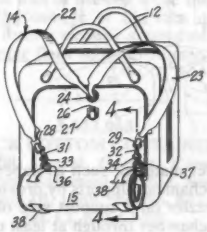
An antibridging roller, having openly spaced, semirigid fibers extending from a central axis is contained within a dispensing apparatus and rotatably supported by a dispensing roller. Partial epicyclic movement of the agglomeration-preventing roller may be effected by rotational movement of the dispensing roller.

3,622,055
CAN END WITH BONDED SEAL SLIDE
Donald L. Douty, Franklin Township, Westmoreland County, Pa., assignor to United States Steel Corporation
Filed Aug. 5, 1970, Ser. No. 61,384
Int. Cl. B65d *47/10*
U.S. Cl. 222—541 **56 Claims**



A can end is disclosed which is provided with a pour opening having a pour width. The pour opening is provided with an entry aperture at one end of the pour opening, the entry aperture having a slide width greater than the pour width. The can end has a can end lapping portion and a can end sealing portion adjacent the pour opening and a plane of bulge strength adjacent the entry aperture. A slide is adapted to pass through the entry aperture and has a slide lapping portion and a slide sealing portion. The slide lapping portion is adapted to register with the can end lapping portion, and the slide sealing portion is adapted to register with the plane of bulge strength. A pull tab has a connection to the slide. Engaging means engage the can end lapping portion to press the can end lapping portion into intimate contact with the slide lapping portion and the slide sealing portion into intimate contact with the plane of bulge strength. A pressure barrier material seals the intimately contacting can end sealing portion and the slide lapping portion and also seals the intimately contacting plane of bulge strength and the slide sealing portion. The pressure barrier material is bonded to the can end sealing portion with a first predetermined shear strength and to the slide lapping portion and to the plane of bulge strength with a second predetermined shear strength less than the first predetermined shear strength. The pull tab has a plane of weakness on one side of the connection to the slide and a pressure portion on the other side of the connection. The pull tab is movable away from the can end about the plane of weakness to cause the pressure portion to break the bond between the slide lapping portion and the pressure barrier material adjacent the can end sealing portion so that the pressure barrier material adjacent the can end sealing portion now functions as an exit and reclosure slide guide. The pull tab is movable to break the bond between the pressure barrier material adjacent the plane of bulge strength and the slide sealing portion and to cause the slide to move through the entry aperture on the pressure barrier material adjacent the plane of bulge strength and on such pressure barrier material as a guide to uncover the pour opening.

3,622,056
CONVERTIBLE SATCHEL
John Edward Droeger, 309 Rutledge St., San Francisco, Calif.
Filed May 7, 1970, Ser. No. 35,339
Int. Cl. A45f *3/00*
U.S. Cl. 224—9 **10 Claims**

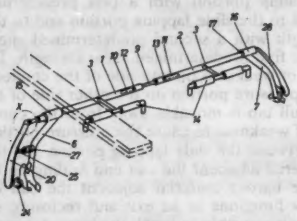


A satchel is made convertible for selective carrying by hand, in the manner of a handgrip or valise, or by supporting it on the back and shoulders in the manner of a knapsack. A substantially rigid frame supports the container or bag portion and has a manually engageable handle and a shoulder strap harness attached thereto. A panel or flap in the covering material of the satchel conceals the strap harness when carrying by hand is intended, and this flap or panel rolls up to provide a resilient cushion engageable with the back of the user when shoulder carrying is intended, the cushion serving to space the lower portion of the frame away from the back of the user. The panel is closed by a slide fastener and straps and buckles are provided to keep the panel in its rolled position. The frame may be made integrally with, or attachable to, the container portion.

3,622,057
LOCKABLE SKI CARRIER FOR MOTOR VEHICLES
Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany
Filed Apr. 7, 1969, Ser. No. 814,108
Claims priority, application Germany, Apr. 19, 1968, P 17 55 273.7
Int. Cl. B60r *9/04*
U.S. Cl. 224—42.1 F **14 Claims**

A carrying frame supported in the gutters of the roof of a vehicle and provided with clamps, which can be locked in a clamping position and serve to hold at least two pairs of skis. A crossmember of the carrying frame is rotatably and axially nondisplaceably mounted in the legs of the carrying frame. The clamps are secured to the crossmember of the carrying

frame. The crossmember of the carrying frame is adapted to be locked against rotation by means of a combination lock,



thereby preventing the release of the ski clamps and the unauthorized removal of the skis.

3,622,058

CONTACT-FREE HOLDING OF A WEB OF SHEET MATERIAL GUIDED IN A FLOATING MANNER

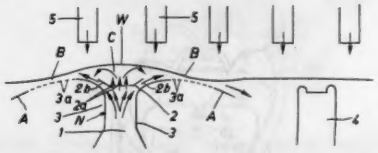
Hilmar Vits, Langenfeld (Rhineland), Germany, assignor to Maschinenfabrik VITS GmbH, Langenfeld (Rhineland), Germany

Filed Sept. 25, 1967, Ser. No. 670,128

Claims priority, application Germany, Nov. 23, 1966, M 71746. The portion of the term of the patent subsequent to May 21, 1985, has been disclaimed.

Int. Cl. B65h 17/32; F26b 13/20

U.S. Cl. 226—7 **7 Claims**



A web of sheet material, such as paper is held free from contact with mechanical supports by providing a floating support system. Nozzles on a support side of the web send air from a blowing chamber through at least one slit-shaped orifice that is set to deliver air to the web at an angle. The wall of the nozzle which faces away from the web is shaped to provide a convex domelike profile, which preferably is perforated to provide a novel effect on suction forces there. There may be two slit-shaped orifices at each nozzle, both set at an angle to the web and shaped as mirror images of each other, both orifices having adjacent perforated domelike profiles. The device and method are applicable to paper driers, multicolor offset and gravure presses, and to climatic treatment of paper.

3,622,059

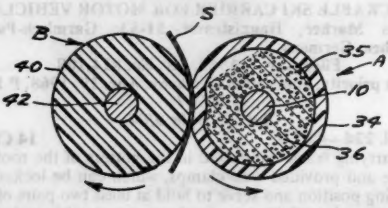
TRANSPORT ROLLER FOR SHEET MATERIAL

Edward H. Savela, Minneapolis, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Continuation-in-part of application Ser. No. 680,775, Nov. 6, 1967, now abandoned. This application Dec. 12, 1969, Ser. No. 884,644

Int. Cl. B65h 17/20, 27/00

U.S. Cl. 226—190 **9 Claims**



Roller apparatus for transporting sheet material such as photographic film and the like between two adjacent rollers of the apparatus is disclosed. One roller of the apparatus disclosed is a rigid roller and the second is resilient. The second roller includes an elongated substantially rigid shaft and a resilient cylindrical outer member mounted on the shaft. The cylindrical outer member is 60 to 95 percent filled with small spheres which move inside of the resilient roller upon rotation of the resilient roller to maintain a uniform and also light pressure in the nip or pinch area of contact between the two rollers when the rollers are rotatably mounted adjacent each other in bearing mounts.

3,622,060

NAIL-DRIVING GUN

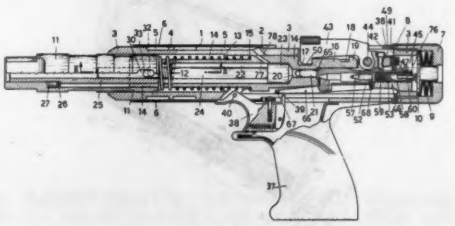
Ugo Gussalli, Brescia, Italy, assignor to Poly Patent Aktiengesellschaft, Schaan, Liechtenstein

Filed May 27, 1970, Ser. No. 40,909

Claims priority, application Italy, May 30, 1969, 17594A/69

Int. Cl. B25c 1/14

U.S. Cl. 227—8 **7 Claims**



A nail-driving gun is disclosed of the kind in which the propulsive force of a powder cartridge is used to drive a nail or the like into a solid body through the intermediary of a ram actuated by the explosion gases generated by the cartridge. The shortcoming has been experienced in conventional guns of this kind that no adjustability of the mechanisms is provided as a function of the nail length, or of the length through which one desires that the nail can penetrate. A telescopable adjustment member is provided by the invention; and recoil spring and detent and tripping mechanisms are also provided. Shock absorber and momentum-dissipating members are also provided at appropriate places in the gun.

3,622,061

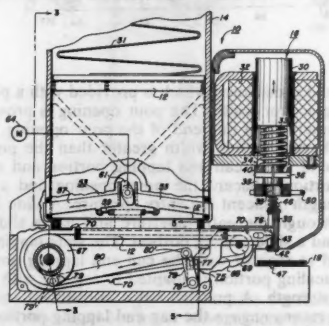
STAPLE FEED AND FASTENING APPARATUS

August Hoyer, Penfield, and Karl E. Liechty, Pittsford, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,514

Int. Cl. B27f 7/24

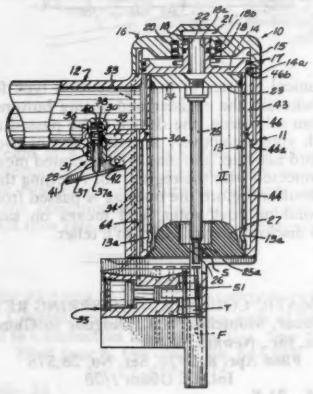
U.S. Cl. 227—120 **3 Claims**



Apparatus for feeding staples in a cartridge form from a magazine storage toward a stapling head assembly which

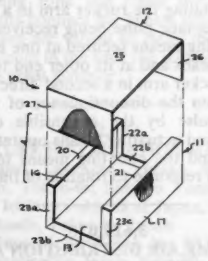
then strips the staples one at a time and drives them into engagement with sheet material so as to cause fastening thereof. A feed mechanism loads each cartridge against a stapling head device before the drive stroke of the head assembly through an energy storage device.

3,622,062
FASTENER-DRIVING APPARATUS
James K. Goode, Jr., Cary, and James A. Whiteside, Rolling Meadows, both of Ill., assignors to Spotnails, Inc., Rolling Meadows, Ill.
Filed Mar. 2, 1970, Ser. No. 15,640
Int. Cl. B25c *1/04*
U.S. Cl. 227—130 **11 Claims**



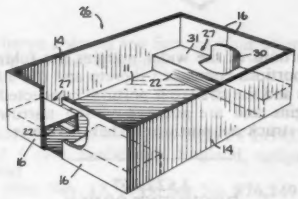
A pneumatically actuated fastener-driving apparatus is provided which utilizes an air pressure system for effecting return of the drive piston to its firing position. An exterior portion of the drive blade is contoured so as to facilitate complete depressurization of the air return chamber prior to initiating the drive stroke of the drive piston. The head of the drive piston carries an adjustable seal which enables a small amount of pressured air to bleed past the piston head during the drive stroke and thereby facilitate pressure buildup in air return chambers so as to effect more rapid return of the drive piston to its firing position.

3,622,063
TWO-BLANK CORRUGATED BOARD CONTAINER
George S. McVeigh, Lynchburg, Va., assignor to McVeigh Engineering Ltd., Lynchburg, Va.
Filed Sept. 5, 1969, Ser. No. 855,576
Int. Cl. B65d *5/34*
U.S. Cl. 229—23 R **7 Claims**



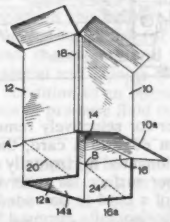
A packaging and shipping case formed of two blanks, each defining a horizontal wall panel and a pair of vertical wall panels foldably connected to the associated horizontal wall panel. One of the blanks also includes transverse securing flaps and lateral securing flaps along its perimeter, the transverse flaps to be secured to opposite edges of the horizontal wall panel of the other blank. The blanks may be formed of corrugated board with their corrugation axes perpendicular to each other, so that the corrugation axes of all vertical wall panels and of the lateral securing flaps joined thereto extend vertically.

3,622,064
CIGAR BOX BLANK
Leewood C. Carter, Warren Township, and Edward K. Mullen, Westfield, both of N.J., assignors to Book Covers, Inc., Newark, N.J.
Filed June 13, 1969, Ser. No. 833,059
Int. Cl. B65d *5/22, 5/50*
U.S. Cl. 229—34 HW **4 Claims**



The cigar box blank is of rectangular configuration and is prescored. The tabs at the ends of the side rails are folded so as to define the end wall of the box while the center flaps are either folded to the outside of the tabs or are folded up within the tabs to form a steplike arrangement. The tabs are secured to the center flaps so as to remain in upright position.

3,622,065
LOCK BOTTOM CONTAINER
Sydney T. Butterfill, Dorval, Quebec, Canada, assignor to Consolidated Paper (Bahamas) Limited, Nassau, Bahamas
Filed July 18, 1969, Ser. No. 842,954
Int. Cl. B65d *5/08*
U.S. Cl. 229—38 **1 Claim**

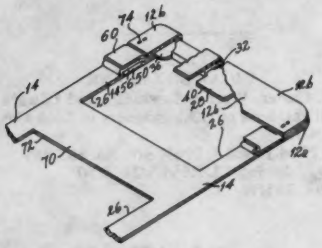


This invention relates to a paperboard container. The feature is the bottom formation which is formed from end flaps that hinge to the sidewalls. Three of the end flaps are interconnected and opposed end flaps are formed with a fold line so that the three interconnected end flaps can be hinged upwardly into an operative position in a flat folded condition. The single end flap is then interleaved with the folded portions of the three interconnected end flaps.

3,622,066
WRAPPER FOR A FRAMED MIRROR AND MIRROR PACKAGE FORMED THEREWITH
Harry M. Saferstein, Teaneck, N.J., assignor to Mechanical Mirror Works, Inc., New York, N.Y.
Filed Aug. 19, 1969, Ser. No. 851,294
Int. Cl. B65d *5/02, 25/00*
U.S. Cl. 229—40 **10 Claims**

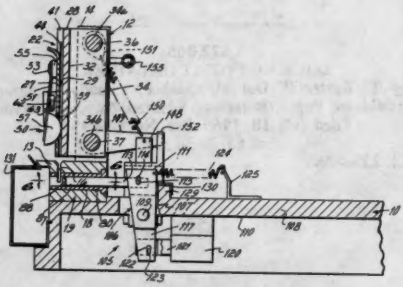
A wrapper for a framed mirror consisting of a unitary ply of paperboard wider and longer than the mirror, leaving

wider margins on two opposed sides than on the others. Portions of the ply connected to the margins are struck out from the ply and folded over on the margins to define the mirror receiving area and to immobilize the mirror reposing



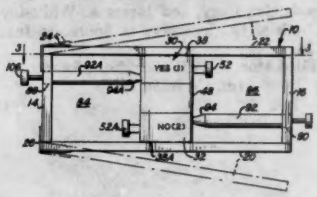
thereon. Portions of the wider margins are folded over the struck out portions connected thereto and the adjacent mirror portions and the struckout portions connected to the narrower margins and are secured to the narrower margins through the struck out portions folded thereover.

3,622,067
DOCUMENT CODER
Thomas R. Bucy, Dayton, and Daniel J. Bandenburg, Cincinnati, both of Ohio, assignors to O. K. Partnership, Cincinnati, Ohio
Filed June 13, 1969, Ser. No. 833,080
Int. Cl. G06k *1/08*
U.S. Cl. 234—48 **3 Claims**



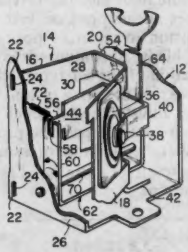
A document coder for selectively removing teeth projecting from the bottom edge of a card, thereby encoding the card, including an elongated horizontally disposed block having a slot in its upper surface for receiving and guiding the tooth-bearing edge of a card to be coded, and having a plurality of transverse horizontally disposed bore which communicate with both the exterior of the block and the card edge guide slot. Also included are a plurality of punch and die assemblies. Each assembly has a tubular bushing which is positioned within one of the transverse bores of the guide block and which is provided with a cross-slot both aligned with the card edge guide slot and communicating with a cylindrical bore formed in the bushing. The assemblies each further include a cylindrical punch slidably positioned within the bushing bore. The punch removes a card tooth registered in the bushing cross-Slot when the punch cutting surface moves relative thereto. In a preferred form, the punch cutting surface makes angles of approximately 75° and 90° with vertical and horizontal planes passing through the punch axis, respectively. Also included in the coder is a spring biased card lock which is secured to a plate which defines a card insertion slot, and which has a gripper biased into the slot through an aperture in the plate for engaging the face of an inserted card and locking it therein. A movably mounted plate positioned in the card slot biases one of the vertical edges of an inserted card in a horizontal direction to properly align the card against a card registration surface located adjacent the other vertical card edge.

3,622,068
VOTE-TALLYING REGISTER
Oliver L. I. Brown, 3 Totoket Road, Quaker Hill, Conn.
Filed Oct. 14, 1970, Ser. No. 80,663
Int. Cl. G07c *13/00*
U.S. Cl. 235—52 **8 Claims**



A mechanical register of the pushbutton type for tallying votes and wherein the register and voting buttons are concealed within a housing, the device to be passed among the voters, each voter selectively actuating one of two pushbuttons to record his vote, and manually operated means on said housing connected with the register for resetting the actuated voting pushbutton before the housing is passed from the first to the second or next voter, and means on said housing operable to disclose the vote tally to a teller.

3,622,069
PNEUMATIC COUNTER WITH SPRING RETURN
Peter H. Bauer, Montclair, N.J., assignor to Gamon-Calmet Industries, Inc., Newark, N.J.
Filed Apr. 8, 1970, Ser. No. 26,578
Int. Cl. G06m *1/00*
U.S. Cl. 235—91 F **5 Claims**

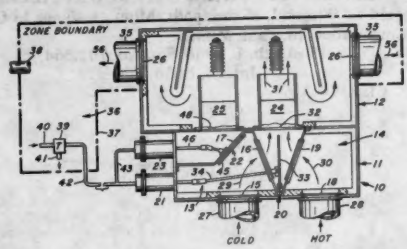


A pneumatic counter is disclosed which comprises a frame; rocker arm supporting means connected to said frame for supporting a rocker arm; a rocker arm pivotally connected to said rocker arm supporting means, with the rocker arm having at least one outstanding portion thereof; expansible chamber means secured between said rocker arm supporting means and the aforementioned outstanding portion of the rocker arm for rotating the rocker arm in a first direction in response to a pneumatic pulse being received by the expansible chamber; biasing means secured at one end to the rocker arm supporting means and at its other end to the rocker arm for rotating the rocker arm in a second direction opposite the first direction upon the discontinuance of the reception of the penumatic pulse by the expansible chamber means; counting means; and actuating means operatively connecting the rocker arm and the counting means for advancing the counting means in response to rotation of the rocker arm.

3,622,070
DUAL VOLUME AIR DISTRIBUTION APPARATUS
Andrew H. Sawyer, Pittsburgh, Pa., assignor to H. H. Robertson Company, Pittsburgh, Pa.
Filed Dec. 17, 1969, Ser. No. 885,887
Int. Cl. Go5g *23/13*; F24f *11/04*
U.S. Cl. 236—13 **7 Claims**

Apparatus which receives separate streams of hot and cold air and distributes a conditioning stream to a zone of a build-

ing which is to be conditioned. Thermostatic means within the zone generates a theremostatic control signal proportional to the instantaneous temperature within the zone. Over a first range of theremostatic control signals, control elements within the apparatus cooperate to discharge the conditioning stream at a constant box flow rate. Over a second range of thermostatic control signals which includes signals beyond the first range, the control elements cooperate to discharge the conditioning stream at flow rates above the constant box flow rate and at a constant temperature.

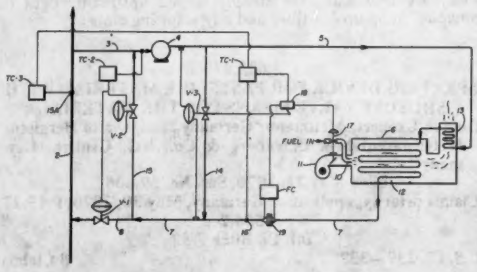


3,622,071

CRUDE PETROLEUM TRANSMISSION SYSTEM

Robert W. Coggins, and Bill S. Burrus, both of Tulsa, Okla., assignors to Combustion Engineering Inc., New York, N.Y.

Filed June 8, 1967, Ser. No. 644,610
Int. Cl. F17d *1/16*
U.S. Cl. 236—24 **4 Claims**



A heater having an oil or gas fired burner is shown, tubes are extended through the heater to conduct crude petroleum through the heating zone and lower the viscosity of the petroleum. Conduits connect the heater tubes to a section of transmission line arn are valved to blend the heated petroleum with the petroleum in the line, the resulting mixture being then transmitted a great distance.

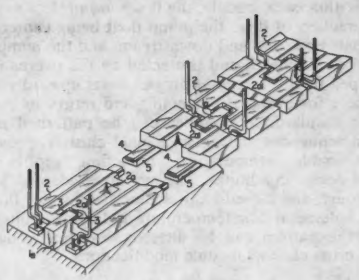
3,622,072

STRUCTURE INSTALLATION METHOD

Kentaro Matsubara, Tokyo-to; Yutaka Satoh, Tokyo-to; Yoshiro Higuchi, Tokyo-to; Shigeru Tamura, Tokyo, and Yasuo Shimizu, Ichikawa-shi, all of Japan, assignors to Nippon Kokuyu Tetsudo, Tokyo-to, Japan

Filed June 16, 1969, Ser. No. 833,406
Claims priority, application Japan, June 20, 1968, 43/42207
Int. Cl. E01b *37/00*
U.S. Cl. 238—1 **5 Claims**

A flexible bag is interposed between a concrete slab bearing track rails and a base structure of a railway road bed, relative to which the slab is temporarily held apart, and then fluid cement mortar is fed into the bag to infate the same and form a pliable, bag-confined mass of mortar which snugly fits the space between the slab and base structue and, upon hardening, forms a strong and firm member whereby the slab is installed on the base structure.

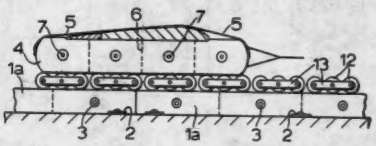


3,622,073

MEANS FOR MOVING HEAVY LOADS

Alexandre J. Cayre, Godalming, England, assignor to RFD-GQ Limited

Filed Nov. 13, 1969, Ser. No. 876,249
Claims priority, application Great Britain, Nov. 18, 1968, 54,673/68
Int. Cl. E01b *23/10*
U.S. Cl. 238—10 R **4 Claims**



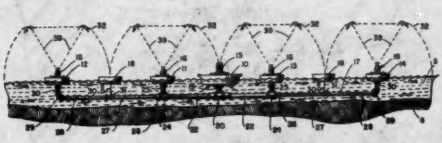
Means for moving a heavy load comprising an inflatable support to be placed under an accessible part of the LOAD, a plurality of inflatable track elements to be arranged in abutting end to end relationship to provide an extended length of track over which the support can be dragged to move the load and anchoring means for securing the track element to the ground, the support and the track elements being of a flexible material and capable of expansion from an inoperative deflated condition to an operative extended condition by the admission of pressure fluid thereto.

3,622,074

MODULAR FLOATING WATER-COOLING SYSTEM

Paul A. Frohwerk, Fort Worth, Tex., assignor to Ceramic Cooling Tower Company, Fort Worth, Tex.

Continuation-in-part of application Ser. No. 7,901, Feb. 2, 1970, now abandoned. This application May 21, 1970, Ser. No. 039,351
Int. Cl. B05b *17/08*
U.S. Cl. 239—11 **31 Claims**



An evaporative water-cooling system and method for reducing the temperature of heated water in an open flow channel utilizes a plurality of water pump and spray units or modules floating in the channel and anchored at sequential locations therealong. In a preferred embodiment, the modules are identical in design, and each include at least

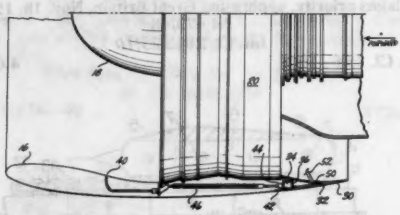
three separate floats, a power-operated water pump supported by one of the floats, at least two sprays supported by others of the floats, and pipes connecting the pump to the sprays. Within each module, the floats are preferably aligned in the direction of flow, the pump float being centered with spray floats upstream and downstream, and the pump intake being located beneath and protected by the overhang of its disk-shaped float. The sprays project water upwardly into the atmosphere for evaporative cooling and return to the channel. The standardized modules can be patterned in flow-direction sequences and cross-channel clusters, providing a predeterminable temperature reduction profile under specified design conditions. The system is adapted for both once-through and closed-loop channels. As water flow rate, channel volume and/or temperature reduction requirements change, the pattern can be altered accordingly, by either down or cross-channel module modifications.

3,622,075

SELF-ACTUATING VARIABLE AREA ACOUSTIC JET ENGINE EXHAUST NOZZLE

Alfred W. Harris, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 16, 1970, Ser. No. 19,604
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.19 **13 Claims**



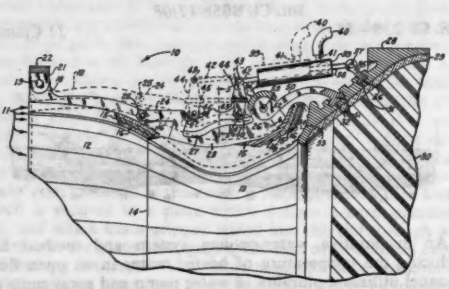
A subsonic aircraft engine variable area nozzle comprising a plurality of pivotally mounted flap means which are essentially pressure balanced such that an aircraft velocity responsive control pressure obtained from the engine cowling structure can be utilized to obtain movement of said flap means into positions giving optimum nozzle exit areas for propulsive efficiency and sound suppression. The velocity responsive control pressures may be obtained from the cowling structure in the engine inlet or from the exterior surface of the nacelle cowling, and are delivered to an expansible control pressure chamber for flap actuation.

3,622,076

VARIABLE AREA NOZZLE

Forrest W. Streeter, Madison, Ala., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Jan. 3, 1969, Ser. No. 788,736
Int. Cl. B64c *15/06*
U.S. Cl. 239—265.43 **2 Claims**



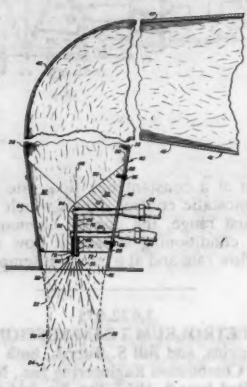
A segmental nozzle having hydraulic actuating systems to move the segments to vary the outer circumference of the nozzle and the throat area of the nozzle to provide thrust modulation of the solid propellant rocket motor to which the segmental nozzle is secured.

3,622,077

APPARATUS FOR AIR-LAYING WET FIBERS

Donald E. Wiegand, Minneapolis, Minn., assignor to Conwed Corporation, St. Paul, Minn.

Filed Feb. 1, 1968, Ser. No. 702,364
Int. Cl. B05b *7/06*
U.S. Cl. 239—336 **4 Claims**



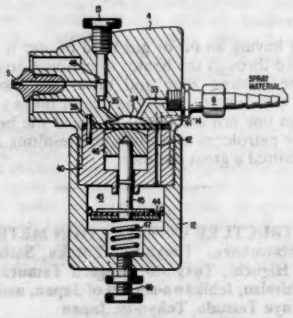
In an apparatus for mixing an air-fiber stream with a liquid spray and dispersing the same, the outlet creates a vena contracta in the air-fiber stream and the nozzles for the liquid spray are thin and have steeply sloped upstream edges to prevent "hang-up" of fiber and any resulting clots.

3,622,078

SPRAYING DEVICE FOR PASTELIKE MATERIAL WITH SHUTOFF VALVE MEANS FOR THE MATERIAL

Gunter Gronert, Mettmann, Germany, assignor to Bergische Metallwarenfabrik Dillenberg & Co., KG, Gruiten, Germany

Filed May 22, 1970, Ser. No. 39,606
Claims priority, application Germany, May 30, 1970, P 19 27 574.2
Int. Cl. B05b *7/32*
U.S. Cl. 239—337 **8 Claims**



A spray device or gun utilizing compressed air as the carrier for the material to be sprayed, comprising a body having an air passage system connecting the air supply to the air nozzle, and a material passage system connecting the supply of the material to the material nozzle. A pressure-reducing valve is interposed in the air passage system to reduce the

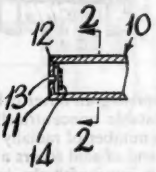
spraying air pressure. A shutoff valve is located in the material passage system to stop or permit flow of material. The shutoff valve is provided with pressure-responsive actuating means, the means being connected to the air passage system whereby when air pressure is present the shutoff valve is kept in its open position. The passages of the material passage system are so arranged that the shutoff valve first closes the passage leading from to the material nozzle means, and thereafter closes the passages leading from the material supply. This closure arrangement maintains the material nozzle and its passage clear from drippings upon air shut off.

3,622,079
LIQUID SPRAY NOZZLES

Kenneth Greenwood, Cliviger, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 8, 1969, Ser. No. 840,013
Claims priority, application Great Britain, July 9, 1968, 32,736/68
Int. Cl. B05b *1/04*
U.S. Cl. 239—426 **3 Claims**

A liquid spray nozzle is formed from a tubular body which is closed off at one end by an end wall. This wall is formed with internal and external grooves intersecting at the center. A disc is secured to the inside of the end wall to convert the internal groove into a passage opening at both ends into the interior of the body.

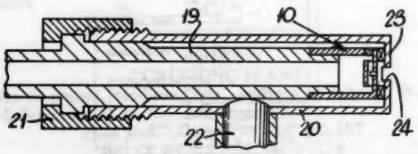


The tubular body is used inside an air casing with nozzles which direct airstreams together in front of the end wall. The nozzle assembly is useful for applications where only very low liquid and air pressures are available.

3,622,080
LIQUID SPRAY NOZZLES

Kenneth Greenwood, Cliviger, Burnley, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 8, 1969, Ser. No. 840,014
Claims priority, application Great Britain, July 9, 1968, 32,737/68
Int. Cl. B05b *1/04*
U.S. Cl. 239—426 **3 Claims**



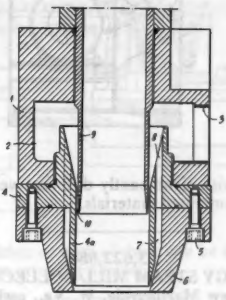
A liquid spray nozzle consists of a tubular body closed at one end by an end wall. The end wall is formed with an internal annular groove defining an island through which a diametral drilling is formed. A slot in the external surface of the end wall intersects the drilling.

The nozzle assembly also includes an air casing which defines air nozzles positioned to create a flat fan-shaped airflow pattern enclosing the flat fan-shaped liquid spray pattern produced by the nozzle assembly.

3,622,081
NOZZLE

William C. Marsh, Marysville, Ohio, assignor to Sciete d'Assistance Technique Pour Produits Nestle S. A.

Filed June 20, 1969, Ser. No. 835,173
Int. Cl. B05b *17/06*
U.S. Cl. 239—427.3 **3 Claims**

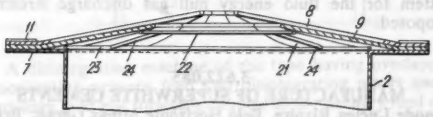


A nozzle for agglomerating powdered materials, especially food products, comprises at least two annular steam inlets into a central duct through which the material is passed. Other features of the invention appear in the specification and drawings.

3,622,082
VARIABLE-AREA NOZZLE

Malcolm Tyre, Glasgow, Scotland, assignor to Hall-Thermotank International Limited, London, England

Filed Dec. 8, 1969, Ser. No. 883,189
Claims priority, application Great Britain, Dec. 7, 1968, 58,248/68
Int. Cl. B05b *1/02*
U.S. Cl. 239—535 **8 Claims**



A variable-area nozzle is located in a vent pipe, and has a central aperture of variable area dependent upon the fluid flow through the nozzle. The nozzle includes a flexible diaphragm transverse to the vent pipe and having an annular series of inwardly projecting leaves which are flexible to define a central aperture of variable area dependent upon said flow.

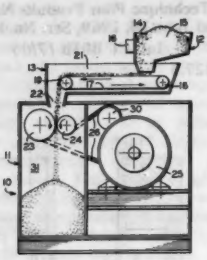
3,622,083
APPARATUS AND METHODS FOR PROCESSING CERAMIC MOLD AND CORE MATERIALS

Herbert Greenewald, Jr., 4296 Braunton Road, Upper Arlington, Ohio

Filed May 18, 1970, Ser. No. 38,105
Int. Cl. B02c *4/02*
U.S. Cl. 241—3 **7 Claims**

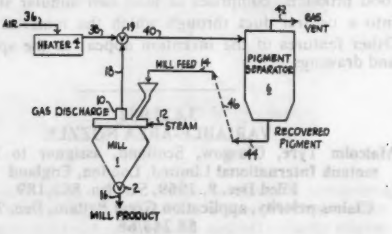
Apparatus for processing ceramic mold and core materials of the type containing ceramic flours, gel binder, and agglomerated gel-bound flour particles utilizes a pair of oppositely rotating, closely spaced rolls having generally cylin-

drical surfaces with high coefficients of friction. The opposed cooperating surfaces of the spaced-apart rolls move in a like



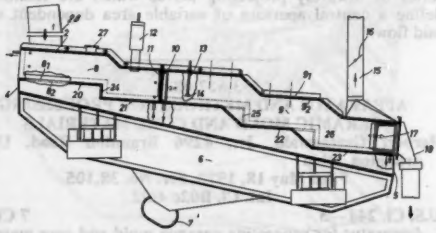
direction but with significantly different velocities to finely divide the agglomerated materials.

3,622,084
FLUID ENERGY STEAM MILL COLLECTION SYSTEM
Joseph Ross, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Sept. 10, 1969, Ser. No. 858,254
Int. Cl. B02c *19/06*
U.S. Cl. 241—5 **11 Claims**



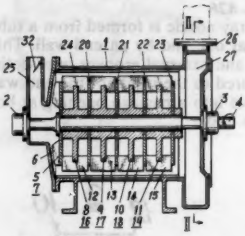
Pigmentary properties of inorganic pigments, particularly pigmentary metal oxides such as titanium dioxide, are enhanced by fluid energy milling with steam. A dry collection system for the fluid energy mill gas discharge stream is proposed.

3,622,085
MANUFACTURE OF SUPERWHITE CEMENTS
Claude Lucien Rivoire, Belo Horizonte Minas Gerais, Brazil, and Raymond Mourros, Le Teil, France, assignors to Societe Anonyme Ciments Lafarge, Paris, France, by said Claude L. Rivoire
Filed July 1, 1969, Ser. No. 838,192
Claims priority, application France, Oct. 28, 1968, 171,666
Int. Cl. B02c *4/44*, *21/00*, *23/00*
U.S. Cl. 241—41 **3 Claims**



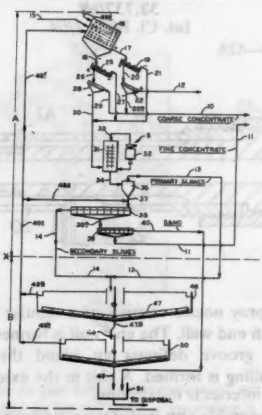
Apparatus in which cement clinker is crushed at a temperature of 1,000° to 1,450° C., is then brought, while passing through a reducing atmosphere for between 1.5 and 6 minutes, down to a temperature in the range 700° to 1,100° C., is then subjected to rapid cooling by the application of atomized water to reduce the temperature to approximately 300° C. while excluding oxygen, and is finally collected in free air, thorough contact with the reducing atmosphere and the subsequent rapid cooling being ensured by carrying out these stages while the clinker is vibrated down an incline from the exit of the crusher to its point of collection in the atmosphere.

3,622,086
PULVERIZER
Takashi Yamagishi, 9-13, 3-chome Sakuragaaka, Kugenuma, Fujisawa-shi, Kanagawa-ken, Japan
Filed Oct. 24, 1969, Ser. No. 869,007
Claims priority, application Japan, Oct. 28, 1968, 43/77892
Int. Cl. B02c *13/288*, *13/12*
U.S. Cl. 241—43 **5 Claims**



A pulverizer comprising an outer cylindrical casing, a plurality of rotors rotatable concentrically within said casing, said rotors having a number of radially extending blades, and at the downstream end of said rotors a whirl chamber whose entrance diameter is same with the inner diameter of said outer casing; whereby material pulverized by said rotors in the casing is directly carried to said whirl-shaped chamber. This chamber is devoid of additional impellers or obstructions, so that the pulverized material is free to outwardly whirl as it leaves the vicinity of the rotors.

3,622,087
BENEFICIATION OF PHOSPHATE ROCK
Hans H. Oltmann, Danbury, Conn., assignor to Dorr-Oliver Incorporated, Stamford, Conn.
Filed Oct. 24, 1969, Ser. No. 869,141
Int. Cl. B02c *21/00*
U.S. Cl. 241—62 **24 Claims**



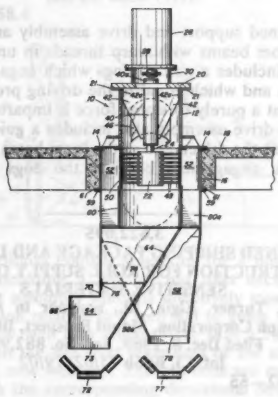
A treatment system for the beneficiation of phosphate rock, wherein a first treatment section effects the beneficia-

tion proper producing the coarse and the fine concentrates of phosphate rock separated from the impurities, while a second section handles the disposal of the separated waste material in the form of large volumes of the primary and secondary slimes. The invention minimizes or eliminates the need for large and objectionable lagoon areas to receive the slimes, in that it solves the disposal problem by the provision of a stagewise thickening operation for the slimes, conducted to produce a high-density mixed sludge that is readily disposable, while large volumes of process water are recovered instead of being lost by evaporation from the lagoons.

3,622,088
APPARATUS FOR DEPITHING FIBROUS VEGETABLE MATERIALS

Kenneth M. Gunkel, Pan American Industrial Consultants, 322 Main St., Stamford, Conn.

Filed June 20, 1969, Ser. No. 834,957
Int. Cl. B02c *13/18, 13/286, 13/284*
U.S. Cl. 241—74 **9 Claims**



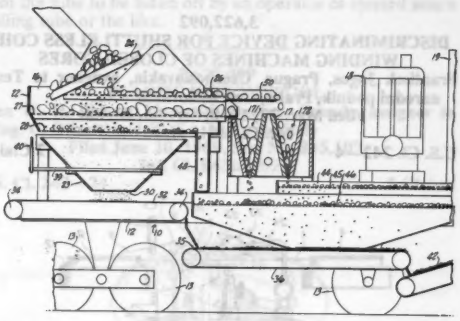
The disclosed depithing apparatus separates fibrous vegetable materials into useful fiber and discardable pith portions for papermaking or the like. The apparatus is vertically constructed to provide gravity feed therethrough for the vegetable materials. Rotating hammers projecting from a rotor break up the materials and centrifugally force the pith through a surrounding screening member. Separate vertically oriented discharge chutes below the rotor convey the separated fiber and pith out of the apparatus, and a baffle is provided to direct the pith into its respective discharge chutes to prevent clogging. Separate embodiments of the apparatus are shown for use in existing sites having limited headroom or insufficient room for full length discharge chutes.

3,622,089
CRUSHING PLANT

John N. Quinn, Madison, Wis., assignor to Johnson Welding & Equipment Co., Inc., Madison, Wis.

Filed Dec. 4, 1969, Ser. No. 882,197
Int. Cl. B02c *23/02*; **B07b** *1/16*
U.S. Cl. 241—75 **5 Claims**

Input material comprised of stone, gravel or other material to be crushed is screened at a receiving station to separate the largest pieces of input material into two different sizes. The largest pieces are fed into an adjacent primary crusher at one of a plurality of zones at which crushing takes place. The second largest pieces are conducted past said first designated crushing zone, in overhead relation thereto, and delivered to crushing means at another zone. Screens located under the crushing means at each crushing zone vibrationally conduct carryover material thereon of larger than finish size to an elevator, from the discharge means of which crushed but still oversize material is fed to crushing means at one of said crushing zones other than said first designated crushing zone. The crushing plant has the customary primary and secondary

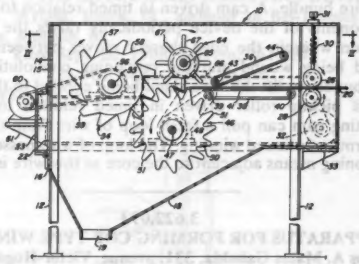


crushers, and either or both of them can be comprised of first and second stage crushing devices.

3,622,090
DISINTEGRATING MACHINE

Arno Jack Liebman, 1819 Shore Drive Shore 218, South Pasadena, Fla.

Original application Feb. 13, 1967, Ser. No. 615,488, now Patent No. 3,529,782, dated Sept. 22, 1970. Divided and this application June 25, 1970, Ser. No. 049,609
Int. Cl. B02c *13/286, 13/10*
U.S. Cl. 241—186 **9 Claims**

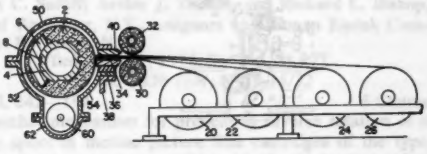


A disintegrating machine of the type having overlapping, cooperating primary feed and disintegrating rotors and an auxiliary feed roll rotatable counter to the primary feed rotor for biasing material into support engagement with the feed rotor.

3,622,091
DRY FLUFFING PULP SHEET STOCK

Howard Bidwell, 56 Aldrich St., Granby, Mass.

Continuation-in-part of application Ser. No. 655,190, July 21, 1967, now Patent No. 3,539,315. This application June 18, 1969, Ser. No. 834,326
Int. Cl. B02c *4/18, 4/30, 4/44*
U.S. Cl. 241—222 **1 Claim**



Apparatus for dry fibering pulp sheets fed by feed rollers from plural sheet stock rolls. The fibering apparatus includes

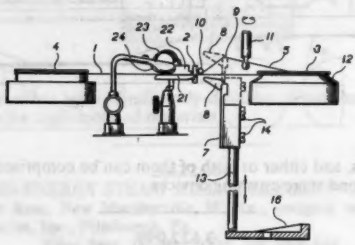
a granular surfaced multisectioned roll having a multiplicity of thin disc-ring sections supported by a driving hollow core. The multisectioned roll cooperates with an adjustable anvil plate located at the point of sheet feed.

3,622,092

DISCRIMINATING DEVICE FOR SHUTTLELESS COIL-WINDING MACHINES OF CLOSED CORES

Frantisek Jagos, Prague, Czechoslovakia, assignor to Tesla, narodni podnik, Praha, Czechoslovakia

Filed Mar. 27, 1970, Ser. No. 23,408
Int. Cl. H01f *41/08*
U.S. Cl. 242—4 **2 Claims**



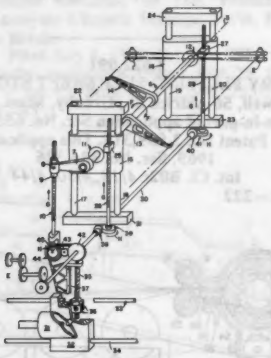
A discriminating device for selecting and assisting in the removal of successive convolutions of wire from a wire bundle drivingly supported on a pair of spaced rollers to dispose one run of the wire bundle through the opening of a toroidal core on which the wire is to be wound. The discriminating device includes an arm defining an upper guide edge extending to a point adjacent to the core but just below the plane of the wire bundle. A cam driven in timed relation to the other components of the device periodically raises the arm to a position wherein the edge thereof moves between the wire strand being wound and the remaining convolutins of the wire bundle to lift the wire stand being applied to the core so that a pickup roller driven in timed relation to the arm elevating cam can pull a fresh loop of wire from the bundle to permit continued winding. The loop of wire passes through tensioning means adjacent to the core as thw wire is wound.

3,622,093

APPARATUS FOR FORMING COP-TYPE WINDINGS

Carlos A. Matas Gabalda, 331, avenue Victor-Hugo, France

Filed Jan. 9, 1969, Ser. No. 789,980
Int. Cl. B65h *54/36*
U.S. Cl. 242—32 **7 Claims**



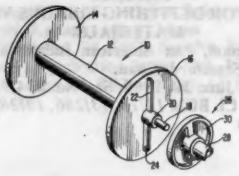
A frame comprising an oscillating shaft with means to gradually move the shaft in a vertical direction thereby providing a method of winding thread on a cop tube without imparting undesirable twist to the yarn.

3,622,094

METHOD AND APPARATUS FOR WINDING LOOM BEAMS

Jack D. Gaskins, Lanett, Ala., assignor to Batson-Cook Company, West Point, Ga.

Filed Oct. 3, 1969, Ser. No. 863,627
Int. Cl. B65h *54/00*
U.S. Cl. 242—54 R **10 Claims**



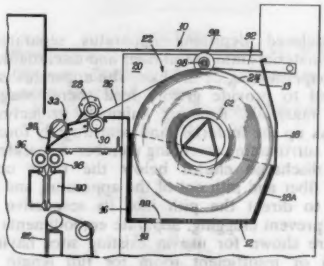
A combined support and drive assembly and method for winding loom beams with warp threads in uniform fashion. The drive includes a pair of dogs which engage ears on the loom beam and which equalize the driving pressure between them so that a purely torsional force is imparted to the loom beam. The drive assembly also includes a guide which positively locates the driven end of the loom beam so as to assure symmetrical engagement between the dogs and the loom beam ears.

3,622,095

COMBINED SHIPPING PACKAGE AND DISPENSER CONSTRUCTION FOR ROLL SUPPLY OF LIGHT-SENSITIVE MATERIALS

Charles L. Turner, Elgin, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed Dec. 8, 1969, Ser. No. 882,901
Int. Cl. B65h *75/02, 19/02*
U.S. Cl. 242—55 **2 Claims**



A dispenser for light-sensitive copy paper formed out of inexpensive construction materials such as paperboard to handle roll stock. The dispenser is constructed so as to rotatably mount the roll in a support type of roll enclosure that is also used as a protective package for the roll during shipment and storage. The support body is equipped with a key that matches a keyway in the copy machine housing so that it fits into the machine in only one way to guarantee proper paper direction.

3,622,096

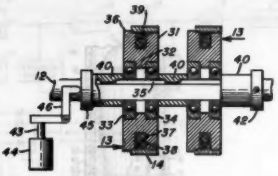
BALL BEARING CORE ADAPTER

Roger W. Young, Upper Montclair, N.J., assignor to John Dusenbery Company, Inc., Clifton, N.J.

Filed May 20, 1969, Ser. No. 826,103
Int. Cl. B65h *19/22, 17/02*
U.S. Cl. 242—56.9 **8 Claims**

A core adapter for supporting a tubular core on a mandrel has a cylindrical body supported on the mandrel by a plurali-

ty of ball bearings. The core is secured to the body and the bearings are maintained under axial stress to control the slippage between the body and the mandrel as a tape is wound on the core.

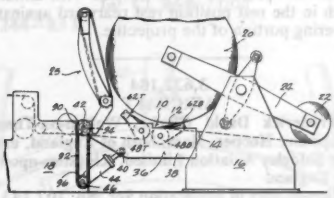


3,622,097

WEB DIRECTIONAL CONTROL APPARATUS FOR BUTT JOINT SPLICER

Ralph A. Maas, Wauwatosa, Wis., assignor to Zerand Corporation, New Berlin, Wis.

Filed Jan. 12, 1970, Ser. No. 2,277
Int. Cl. B65h 19/16
U.S. Cl. 242—58.4 12 Claims



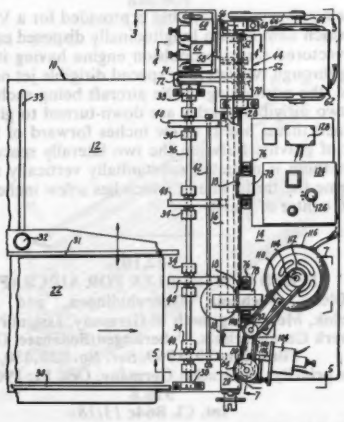
A web directional control apparatus for a universal butt joint splicer including a pair of nip rolls each having a directional belt assembly which is selectively movable to an operative position relative to a web roll to guide the leading edge of the new web into engagement with a running web passing between the nip rolls regardless of the direction of rotation of the new web roll. The nip rolls are mounted for movement with the corresponding directional belt assembly into engagement with the other nip roll.

3,622,098

MACHINE FOR ROLLING FLAT SHEETS

Craig R. Nelson, Green Village, N.J., assignor to Roy A. Nelson, Green Village, N.J.

Filed July 8, 1969, Ser. No. 839,981
Int. Cl. B65h 17/02
U.S. Cl. 242—67.1 9 Claims



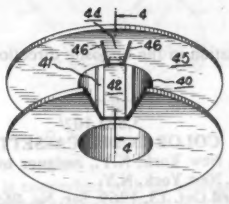
A flat sheet is placed on a bed between guides and moved by feed rollers laterally into a stationary tube through a slot therein. When the sheet enters the tube, it is engaged by backup rollers which feed the sheet around the inside of the tube to wind the sheet, and after the sheet is so wound, the winding rolls become inoperative and the rolled sheet is engaged by another roller of soft rubber to be moved endwise from the tube to be taken off by an operator or ejected into a mailing tube or the like.

3,622,099

PLASTIC RIBBON SPOOL

John W. H. Bishop, Montreal, Quebec, Canada, assignor to Ing. C. Olivetti and C., S.p.A., Ivrea, Italy

Filed June 20, 1969, Ser. No. 835,107
Int. Cl. B65h 75/28
U.S. Cl. 242—74 5 Claims



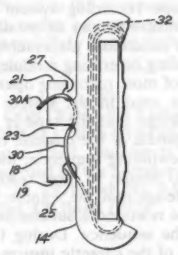
Plastic ribbon spools in which a tab, foldable from a spool flange, is adapted to pinch and secure one end of an inked ribbon to the spool core and lock in place with the ribbon so secured.

3,622,100

BOBBIN WITH LEAD STRAIN-RELIEVING DEVICE

Thomas J. Wright, Itasca, Ill., assignor to Bel-Tronics Corporation, Addison, Ill.

Filed Sept. 20, 1968, Ser. No. 761,157
Int. Cl. B65h 75/28, 75/36
U.S. Cl. 242—125.2 9 Claims



The invention relates to a bobbin having means for securing the wire leading from the bobbin to prevent any strain being placed on the coil wound on the bobbin.

3,622,101

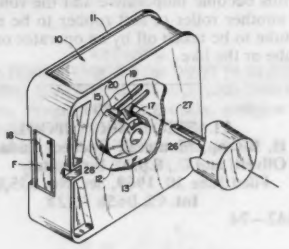
INTEGRAL ANTIBACKUP MECHANISM IN A MOTION PICTURE FILM CARTRIDGE

Robert C. Sutliff; Archie J. Tucker, and Richard L. Bishop, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 31, 1970, Ser. No. 24,077
Int. Cl. G03b 1/04; G11b 15/32
U.S. Cl. 242—194 5 Claims

A ratchet mechanism for preventing reverse rotation of a takeup spool in motion picture film cartridges of the type having a partition between supply and takeup chambers. The ratchet mechanism comprises a flexible pawl finger integrally formed as a part of the partition, and a ratchet associated

with a spool for rotation therewith to cooperate with the pawl finger to prevent rotation of the spool in one direction

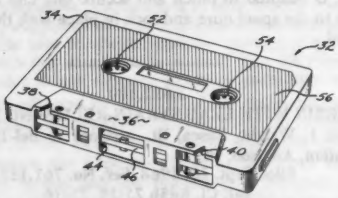


and permit rotation in the opposite direction for winding up film.

3,622,102
COLOR-CODED CASSETTE

Calvin L. Fox, New York, N.Y., assignor to Scanfax Systems Corporation, New York, N.Y.

Filed Oct. 13, 1969, Ser. No. 865,622
Int. Cl. G03b *1/04*; G11b *15/32, 23/04*
U.S. Cl. 242—199 **1 Claim**



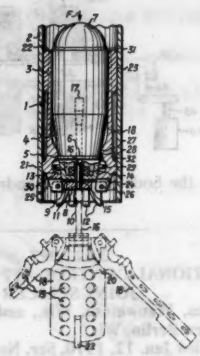
A magnetic tape recording system including means for color coding to insure proper orientation of a tape cassette during any of its functional placements in either or all of a recording, rewinding or erasing module of the system. At the commencement of most recording operations, the color coding of a cassette used in the system serves to insure the operator's knowledge that the tape is almost totally wound on the feeding spindle of the cassette rather than the takeup spindle. In the rewinding sequence, the color coding of the cassette serves to insure, in most rewinding operations, the operator's knowledge that the spindle upon which the magnetic tape is to be rewound is substantially empty at the commencement of the sequence. During the erasing operation, the color coding of the cassette insures that the operator has knowledge of the tape being totally wound on the bottom spindle in the vertically oriented erasing mechanism.

3,622,103
TWISTLESS PROJECTILE WITH LAUNCHING TUBE

Heinrich Meier, Rumlang, Switzerland, assignor to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG, Zurich, Switzerland

Filed July 1, 1969, Ser. No. 838,202
Claims priority, application Switzerland, July 11, 1968, 10368/68
Int. Cl. F42b *13/32*
U.S. Cl. 244—3.28 **2 Claims**

Twistless projectile with launching tube having stabilizing, preferably braking, fins pivoted on pins which are arranged perpendicular to the longitudinal axis of the projectile and secured to a support arranged aft of the projectile base, so that the fins can swing from a rest position, in which they project forward, into an action position, in which they project rearward. The fins constitute segments of a hollow rotational body which completely envelops the projectile body in the rest position and at least partially rests against the projectile body. The fins have outward-projecting ridges which together form a closed guide ring sealing against the launching tube. The projectile body tapers in its rear portion

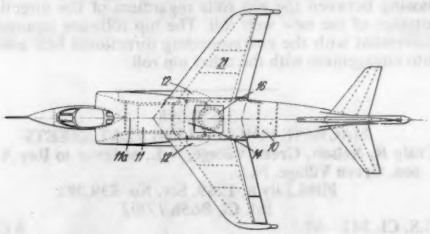


and the fins are provided on the inside with annular shoulders which in the rest position rest rearward against a flange of the tapering portion of the projectile.

3,622,104
AIRCRAFT

Charles Frederick David Clarke, Walton-on-Thames, and Ralph Spenser Hooper, Ham, both of England, assignors to Hawker Siddeley Aviation Limited, Kingston-upon-Thames, Surrey, England

Continuation-in-part of application Ser. No. 707,143, Feb. 21, 1968, now abandoned. This application Mar. 19, 1970, Ser. No. 019,550
Int. Cl. B64c *29/00*
U.S. Cl. 244—12 B **5 Claims**



An aircraft engine assembly is provided for a V/STOL aircraft which comprises a longitudinally disposed continuously rated vectored thrust propulsion engine having its jet efflux issuing through two laterally spaced dirigible jet nozzles at its aft end, the positioning in the aircraft being such that when these two dirigible nozzles are down-turned to give lift their combined thrust line is a few inches forward of the aircraft center of gravity. Between the two laterally spaced dirigible nozzles there is mounted substantially vertically a direct lift jet engine the thrust line of which lies a few inches aft of the aircraft center of gravity.

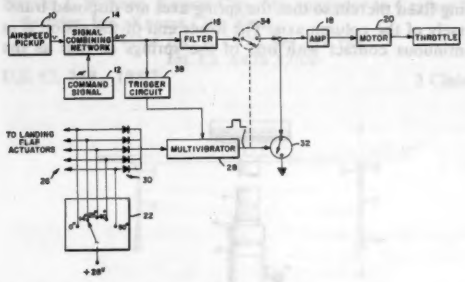
3,622,105
SPEED CONTROLLER FOR AIRCRAFT

Hans-Dieter Buchholz, Oberuhldingen, and Hans-Peter Reerink, Meersburg, both of Germany, assignors to Bodenseewerk Geratetechnik, Ueberlingen/Bodensee, Germany

Filed Apr. 30, 1969, Ser. No. 820,430
Claims priority, application Germany, Oct. 11, 1968, P 18 02 518.8
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 D **4 Claims**

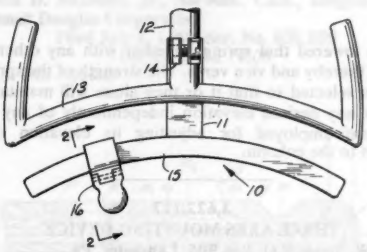
A speed controller for an aircraft is described, having a servo speed control loop and means for altering the response

of the servo controller to an aircraft disturbance for a



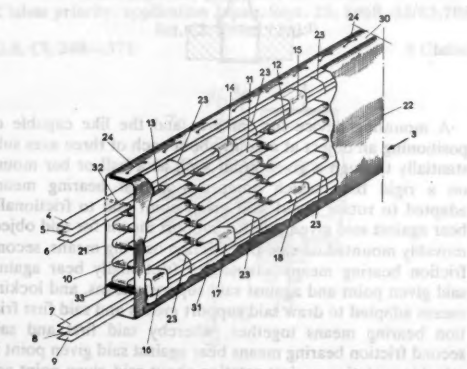
predetermined period of time upon initiation of the disturbance.

3,622,106
CONTROL WHEEL AILERON TRIM
Robert R. Brackett, Route 6, 8825 38th St., Kenosha, Wis.
Filed Apr. 20, 1970, Ser. No. 30,138
Int. Cl. B64c *13/08*
U.S. Cl. 244—83 R **1 Claim**



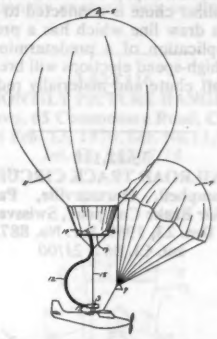
An aileron trim device for small aircraft. This device includes a lead weight which may be placed at any desired position on the control wheel so as to prevent the pilot from having to hold pressure on the wheel when the load is heavier on one side of the craft.

3,622,107
AIRCRAFT STOPPING OR ARRESTING BARRIERS
Jean Paul Bernard, Paris, France, assignor to Aerazur Constructions Aeronautiques, Issy-les-Moulineaux, France
Continuation-in-part of application Ser. No. 680,319, Nov. 3, 1967, now abandoned. This application July 8, 1969, Ser. No. 840,009
Int. Cl. B64f *1/02*
U.S. Cl. 244—110 C **10 Claims**



A barrier system for arresting an aircraft on a runway comprises a net barrier folded within a bag housed in a narrow trench.

3,622,108
SAFETY DEVICE FOR DISABLED AIRPLANES
George A. Mathewson, 4312 South Salina St., Syracuse, N.Y.
Filed Feb. 27, 1970, Ser. No. 13,808
Int. Cl. B64d *17/80*
U.S. Cl. 244—139 **6 Claims**



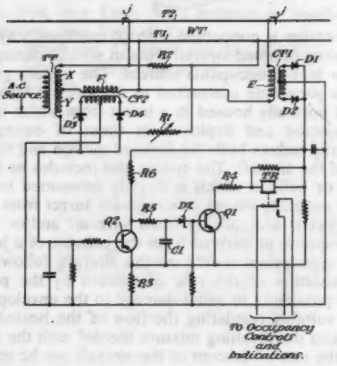
The invention is concerned with an emergency system for safely landing disabled aircraft without serious damage to the aircraft or to the occupants thereof. The system preferably includes a parachute connected to the aircraft by a flexible cable and normally housed in a turret from which it may be quickly ejected and deployed in times of emergency to preliminarily reduce both the forward motion and the rate of descent of the aircraft. The system also includes an inflatable envelope or balloon which is flexibly connected to the aircraft and normally stored in a separate turret from which it can be ejected and quickly filled with air and/or a heated gaseous medium as derived from the exhaust of a jet engine or other appropriate source on the aircraft, following sufficient retardation of the rate of descent by the previously deployed parachute to avoid damage to the envelope or balloon. By suitably regulating the flow of the heated gaseous medium and the resulting mixture thereof with the air in the balloon, the rate of descent of the aircraft can be reduced to a safe landing speed which prevents or minimizes impact damage to the aircraft and to the occupants thereof upon impact with the ground under emergency conditions such as may be caused by power failure during flight.

3,622,109
VELOCITY CONTROLLED PARACHUTE STABILIZATION SYSTEM
Gene R. Drew, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy
Filed Jan. 22, 1970, Ser. No. 5,065
Int. Cl. B64d *17/74*
U.S. Cl. 244—147 **5 Claims**

A parachute stabilization system which employs a series of parachutes connected in tandem including a main parachute

and a pair of forward and aft stabilizer chutes. The aft stabilizer chute is stowed within a releasable bag until deployed. A projectable slug propels the bag to a deployed position where the aft stabilizer chute is withdrawn from the bag, the bag and slug separating from the stabilization system and falling free thereof. The aft stabilizer chute is larger in diameter than the forward stabilizer chute to provide increased drag forces at low speed and improve the seat-man mass stabilization. The aft stabilizer chute is connected to the forward stabilizer chute by a draw line which has a preselected tensile strength. The application of a predetermined load on the draw line during high-speed ejections will break the draw line and jettison the aft chute and materially reduce the applied drag force.

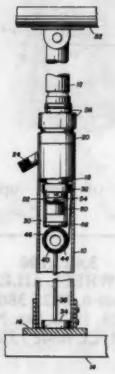
3,622,110
RAILROAD TRACK CIRCUIT
Richard D. Campbell, Harmarville, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Dec. 23, 1969, Ser. No. 887,672
Int. Cl. B61l *21/00*
U.S. Cl. 246—40 **10 Claims**



Both portions of a center tapped track transformer secondary winding, a load resistor, and a balancing resistor are connected into a balanced bridge network, with the load resistor also connected across the track section rails. A first control transformer primary winding is connected in parallel with the load resistor and its rectified secondary output is applied to charge a timing capacitor which biases a first transistor to conduction to energize the track relay. The primary winding of a second control transformer is connected across opposite, voltage balanced terminals of the bridge to produce, when a track shunt unbalances the bridge network, a rectified output which is applied to fire a second transistor. When conducting, this second transistor discharges the capacitor, thus turning off the first transistor to deenergize the track relay. Removal of the rail shunt turns off the second transistor and the capacitor recharges over a predetermined timing period. The first transistor again fires when the capacitor charge exceeds a preset level. Reenergization of the track relay is thus delayed to avoid loss of train detection under erratic rail shunting conditions.

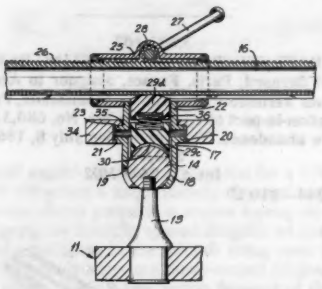
3,622,111
COUNTERBALANCE FOR GYMNASTIC APPARATUS
George P. Nissen, and Harlan J. Kelly, both of Cedar Rapids, Iowa, assignors to Nissen Corporation, Cedar Rapids, Iowa
Continuation of application Ser. No. 668,137, Sept. 15, 1967, now abandoned. This application Dec. 5, 1969, Ser. No. 878,994
Int. Cl. A63b *13/00*
U.S. Cl. 248—162 **13 Claims**

A counterbalance for gymnastic apparatus, such as parallel bars, having one or more upright tubular columns, each of which in turn is provided with a piston telescopically adjustable therewithin. In the preferred forms of the invention, one or more spirally rolled springs of flat spring material are located within each column, the outer ends of the springs being fixed therein so that the spring axes are disposed transversely of the column axis. The lower end of the piston is in continuous contact with one of the springs so that as the



piston is lowered that spring, together with any others, are unrolled thereby and vice versa. The strength of the spring or springs is selected so that it or they alone will maintain the piston at any desired elevation independently of any other mechanism employed for adjusting its elevation or for locking it to the column.

3,622,112
THREE AXES MOUNTING DEVICE
George W. Stroh, P.O. Box 906, Lancaster, Pa.
Filed Nov. 21, 1969, Ser. No. 878,778
Int. Cl. F16m *11/14*
U.S. Cl. 248—181 **7 Claims**



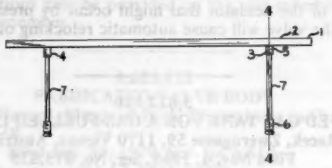
A mounting device for cameras and the like capable of positioning an object at a point about each of three axes substantially through a given point such as a ball or bar mount on a rigid base which comprises a first bearing means adapted to rotate about said given point and to frictionally bear against said given point, a support means for said object movably mounted on said first friction bearing means, second friction bearing means adapted to frictionally bear against said given point and against said support means, and locking means adapted to draw said support means and said first friction bearing means together, whereby said first and said second friction bearing means bear against said given point in a locking relation against rotation about said given point and said second friction bearing means bears against said support means in a locking relation.

3,622,113

FURNITURE SUPPORTING FRAME STRUCTURE

Norvin J. Wehner, Kansas City, Mo., assignor to Cramer Industries, Inc., Kansas City, Kans.

Filed Jan. 2, 1970, Ser. No. 140
Int. Cl. A47b 57/00
U.S. Cl. 248—188.7 3 Claims



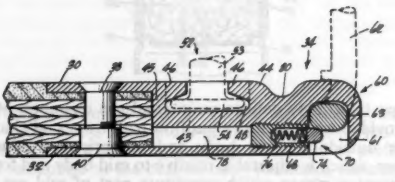
This invention relates to the frame, and particularly the leg structure of articles of furniture, such as tables, desks, chairs, and the like, and consists of securing the tubular frame members and legs together by elongated bolts extending therethrough.

3,622,114

PALLET ASSEMBLY

Kenneth D. McIntire, Jr., Norwalk, Calif., assignor to McDonnell Douglas Corporation

Filed July 1, 1969, Ser. No. 838,059
Int. Cl. B65d 19/00
U.S. Cl. 248—361 R 4 Claims



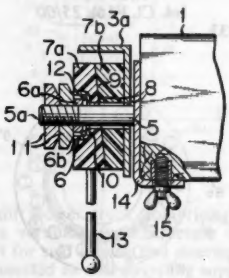
A cargo pallet having a center panel and an edge assembly. The edge assembly comprises a plurality of edge members. Each of the edge members has integrally formed therein a plurality of cargo net securing fittings. The entire cargo pallet is fastened together by removable fastening means to permit ease of replacement.

3,622,115

SUPPORT MECHANISM OF AN ELECTRONIC MUSICAL INSTRUMENT

Hiroshi Tone, Hamamatsu-shi, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Sept. 22, 1969, Ser. No. 859,899
Claims priority, application Japan, Sept. 25, 1968, 43/82,705
Int. Cl. F16m 13/00
U.S. Cl. 248—371 5 Claims



A support mechanism of an electronic musical instrument including a body supported at its both sides by leg frames, comprises a pair of journals provided at the respective sides of said body, angular contact bearings each having an inner race for securing the journal and an outer race, and frictional contact members cooperating each other, one of which is attached to the outer race of said bearing, and the other of which is attached to the leg frame.

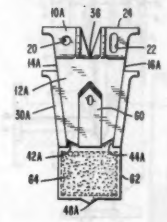
The rotation of the frictional contact member attached to the outer race of bearing allows the body of the musical instrument to be frictionally engaged with or disengaged from the leg frame.

3,622,116

NONTILT PICTURE HANGER

Leonard F. Fellows, 65 Commodore Road, Chappaque, N.Y.

Filed Feb. 13, 1970, Ser. No. 11,102
Int. Cl. A47j 7/14
U.S. Cl. 248—467 11 Claims



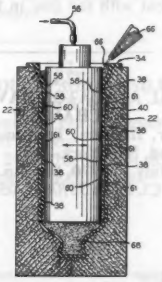
A tongue member with tapered sides is arranged for attachment to the back surface of a picture to be hung. A bracket member defining a socket for the tongue is arranged for attachment to a picture-supporting surface. The socket has sides tapered at the same angle as the tapered sides of the tongue to engage securely therewith when the tongue is inserted into the socket.

3,622,117

MEANS FOR MANUFACTURING PLASTIC CASTINGS WITH WINDOWS OR OPENINGS FORMED DURING THE CASTING PROCESS

Lester N. Lerman, and Joseph A. Biagioni, both of Chicago, Ill., assignors to Florence Art Company, Inc., Chicago, Ill.

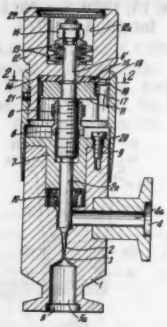
Filed Apr. 1, 1969, Ser. No. 811,771
Int. Cl. B29c 1/04, 1/12, 1/14, 5/00
U.S. Cl. 249—65 2 Claims



A means for manufacturing and producing plastic castings with windows or openings formed in the body of the casting during the casting process, which includes a mold having a hollow interior and an inflatable member positioned in said mold so that portions of the inflatable member are in contact with portions of the inside wall surface of the mold and other portions are not in contact, so that when the plastic material is introduced between the mold and the inflatable member the plastic material will fill and occupy the noncontacting surfaces to form the body of the casting while the contacting surfaces block out the areas for the casting material and form the openings or windows in the body or wall of the casting

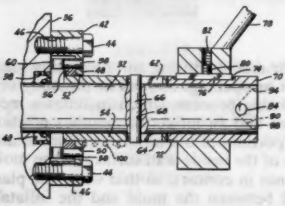
during the casting process so that when the casting is formed the openings or windows are preformed in the body thereof.

3,622,118
VALVE CONSTRUCTION
Walter Schadler, Triesen Nr. 353, Liechtenstein, assignor to Balzers Patent-Und Beteiligungs-AG, Balzers, Liechtenstein
Filed Dec. 15, 1969, Ser. No. 885,209
Claims priority, application Switzerland, Dec. 20, 1968, 19492/68
Int. Cl. F16d *23/00, 7/02, 43/20*
U.S. Cl. 251—81 **2 Claims**



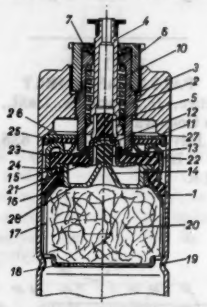
A valve, particularly for controlling gas flow, includes a needle valve which is movable toward and away from engagement with its associated valve seat by a threaded spindle. The spindle is rotated by driving means which is connected thereto through a friction coupling. The driving is effected by means of a handle which is rotatably mounted on an extension of the spindle and which is biased toward engagement with a coupling disc which is mounted on the spindle for rotation therewith. An intermediate plastic disc coupling member disposed between the coupling disc and the rotatable handle provides for the frictional transmission of the torque in dependence upon the setting of the spring means for urging the handle into engagement with the intermediate disc. The coupling arrangement insures that the valve will only be closed with permissible closing pressures which will not be exceeded. In order to provide for a larger driving torque when the valve is moved in an opening direction a coil spring is coupled between the driving member and the coupling disc which is moved to contract and provide tight frictional engagement with the disc in the opening direction only.

3,622,119
MECHANICAL ACTUATOR HAVING LOCKING MECHAMISM
Joseph Paul Weber, Houston, Tex., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed July 1, 1970, Ser. No. 51,481
Int. Cl. F16k *35/00;* **G05g** *5/20*
U.S. Cl. 251—96 **13 Claims**



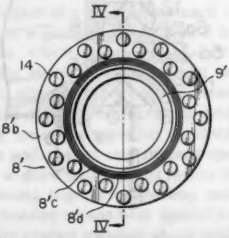
A mechanical actuator for valves and other mechanical devices, according to the present invention, includes a locking mechanism disposed about a rotatable valve-actuating stem that normally maintains the actuator in a locked condition, thereby preventing inadvertent movement of the valve or other mechanical device with which the actuator may be associated. The locking mechanism is unlocked upon predetermined initial rotation of a handwheel or other means for rotating the actuating stem of the mechanical actuator, thereby allowing the actuator to open or close the valve mechanism. Cessation of rotation of the handwheel or overrunning of the actuator that might occur by pressure actuation of the valve will cause automatic relocking of the actuator.

3,622,120
VALVED GAS TANK FOR A GAS-FUELLED LIGHTER
Alfred Racek, Zwerngasse 59, 1170 Vienna, Austria
Filed Nov. 4, 1969, Ser. No. 873,835
Claims priority, application Austria, Nov. 4, 1968, A 10702/68
Int. Cl. F23d *13/04;* **F23g** *2/42*
U.S. Cl. 251—144 **4 Claims**



A gas tank body defines an internal gas chamber. Means are provided which define a gas flow path from said chamber to the outside of said body and comprise an adjusting member, which is adjustable relative to said body and formed with passage means which constitute part of said gas flow path. A compressible pourous throttling member is disposed in said gas flow path and operatively connected to said throttling member and adjustable to control the compression of said throttling member. Sealing means are provided, which seal said adjusting member in said body and comprise a diaphragm extending around said adjusting member, inner gripping means cooperating with said adjusting member to grip said diaphragm, and outer gripping means which grip said diaphragm radially outwardly of said adjusting member.

3,622,121
VALVE MECHANISM
Shigeru Watabe, Kariya-shi; Katsushi Nakashima, Aichi-ken, and Tooru Hamada, Kariya-shi, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Jan. 26, 1970, Ser. No. 5,870
Claims priority, application Japan, Jan. 29, 1969, 44/7654, 44/10482
Int. Cl. F16k *25/00*
U.S. Cl. 251—333 **9 Claims**



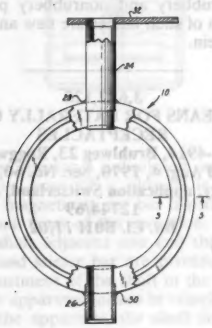
A valve mechanism having a rubber valve head member and a cooperating seat member having a passage

therethrough, either of which is provided on its acting surface with circular ridge means to surround the passage in the seat member for cutting off flow of fluid through the passage. A plurality of wartlike projections may be disposed on one of the members in a circle inside or outside the circular ridge means to define a deformation of the valve head in its operating position and to assist return of the valve head to its rest position. Either or both the circular ridge means or the wartlike projections may be provided on the seat member or the valve head member.

3,622,122
FABRICATED VALVE BODY

George E. Hansen, Elmwood Park, Ill., assignor to Crane Co., Chicago, Ill.

Filed Jan. 29, 1970, Ser. No. 6,814
Int. Cl. F16k *27/00*
U.S. Cl. 251—367 **7 Claims**

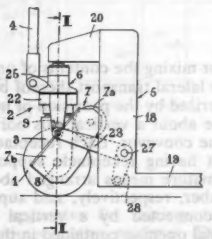


A fabricated hollow body for containing fluids, for use as a valve body or the like, and a method for making the same. The body is fabricated by stacking a plurality of preformed metal stampings to the desired body thickness, securing said stampings, drilling trunnion holes in the body, mounting suitable trunnions therein, and, placing the desired stem mounted closure member in said trunnion.

3,622,123
WALKIE FORKLIFT POWER TRUCK

Andre Le Gloan, Argentan Orne, France, assignor to Societe D'Etudes De Baevets Et D'Applications Technologiquis (S.E.B.A.T.), Paris, France

Filed Apr. 30, 1970, Ser. No. 33,259
Claims priority, application France, May 5, 1969, 6,914,274
Int. Cl. B60p *1/00*
U.S. Cl. 254—2 R **4 Claims**

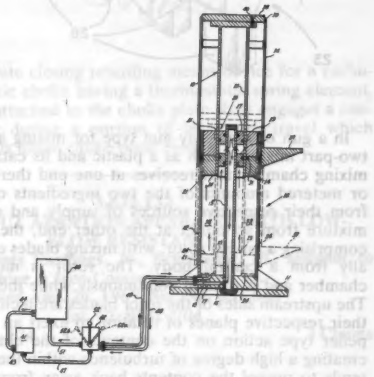


A walkie forklift power truck comprising a driving and steering wheel, a vertically fixed structure incorporating a swiveling support for said driving and steering wheel, a control member connected to said swiveling support, an elevating structure vertically connected to said fixed structure so that said elevating structure can be lifted in relation to said fixed structure, means coacting with said fixed and elevating structure, for lifting said elevating structure, a unit comprising a motor and a reduction gearing for driving said driving and steering wheel from said motor, wherein said motor and reduction gearing are assembled in a manner known per se to constitute a self-contained, detachable, independent, complete unit enclosed in a fluidtight casing adapted to be easily separated, with an output shaft, and wherein said output shaft is trunnioned in said swiveling support and carries the driving wheel so as to drive the latter directly, said motor and reduction gearing unit, which constitutes a floating assembly, being carried only by said wheel and held against rotation by a reaction point positioned on said swiveling support.

3,622,124
HYDRAULIC LIFT JACK

Kenneth R. Sidles, and Dwayne R. Sidles, both of 314 No. 15th St., Estherville, Iowa

Filed May 18, 1970, Ser. No. 38,032
Int. Cl. B66f *3/24*
U.S. Cl. 254—93 R **4 Claims**

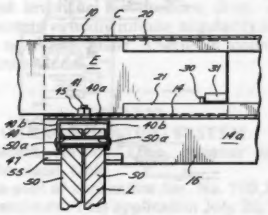


The lift jack has an upright cylinder operatively associated with a lift piston assembly, the full surface area of the underside of which is utilized in the raising of the piston assembly; and only a portion of the surface area of the top side is utilized in the lowering of the piston assembly. With fluid under a constant pressure and volume rate supplied from a single source, the piston assembly is slowly elevated with a maximum lifting pressure and quickly lowered with an appreciably reduced pressure.

3,622,125
PORTABLE COLLAPSIBLE AND FOLDABLE BARRICADE

Harold C. Powell, Houston, Tex., assignor to O. B. Stanley, Bay City, Tex., a part interest

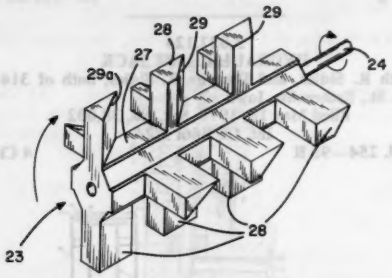
Filed Jan. 29, 1970, Ser. No. 6,794
Int. Cl. E01f *13/00*
U.S. Cl. 256—64 **2 Claims**



A portable collapsible and foldable barricade capable of being extended and unfolded to a length for substantially fully blocking off a conventional lane of a highway or road

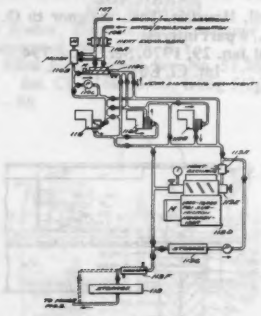
while being collapsible and foldable to a size to fit within the trunk of an ordinary automobile.

3,622,126
MIXING ROTOR FOR PLASTIC GUN
John H. Eberle, El Cajon, Calif., assignor to Eberle Enterprises, San Diego, Calif.
Filed June 16, 1969, Ser. No. 833,617
Int. Cl. B01f 7/04
U.S. Cl. 259—7 **7 Claims**



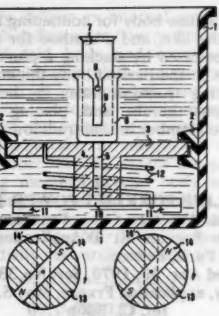
In a gun of the spray gun type for mixing and applying a two-part mixture, such as a plastic and its catalyst, having a mixing chamber that receives at one end thereof controlled or metered amounts of the two ingredients of the mixture from their respective sources of supply and discharges the mixture from an outlet at the other end, the improvement comprising a mixing rotor, with mixing blades extending radially from a central body. The rotor is mounted in the chamber and is rotated continuously while the gun is in use. The upstream sides of the rotor blades are inclined relative to their respective planes of rotation to exert an axial flow impeiler type action on the contents of the chamber thereby creating a high degree of turbulence within the chamber that tends to propel the contents back away from the chamber outlet.

3,622,127
AQUEOUS LATICES OF HIGH-POLYMER COMPOSITIONS AND PROCESSES AND MEANS FOR THE PRODUCTION THEREOF
Oliver W. Burke, Jr., P.O. Box 1266, Pompano Beach, Fla.
Continuation-in-part of application Ser. No. 621,997, Mar. 7, 1967, now Patent No. 3,503,917, Continuation-in-part of application Ser. No. 691,823, Dec. 19, 1967, now abandoned. This application Oct. 15, 1968, Ser. No. 767,790
Int. Cl. B01f 7/00
U.S. Cl. 259—7 **2 Claims**



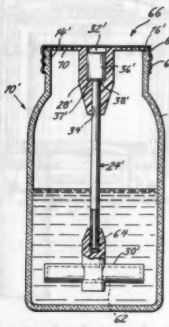
The preparation of aqueous latices from solvent dispersions of elastomers and other high-polymer compositions has presented problems including excessive viscosity during processing and foaming and coagulation, which have produced losses and increased costs. Herein combinations of steps are disclosed which reduce or eliminate various of these problems; enable the preparation of latices from high-solids, high-viscosity cements as well as from high-solids cements of low molecular weight polymer; enable preparation of latices of grafted or filler-extended or filler-reinforced elastomers; enable preparation of latices of low molecular weight polymer which are then modified to materially increase the molecular weight of the polymer and/or the latex particle size; and enable the preparation of improved latices both dilute and of high-solids contents, which are useful for example for adhesive and film-forming purposes. The process in common with that of related copending applications is characterized, inter alia, by the establishment of a flow of latex through the separating zone and the impingement on said flow of the coalesced latex droplets from the solvent vapor stream in which they are delivered to the separator, and in certain embodiments by the use of particular additive materials. New combinations of steps and of apparatus for performing the same are also disclosed and claimed. The process disclosed is applicable to the production of latices from specified rubbery and nonrubbery polymer compositions, and certain of such latices are new and useful products also claimed herein.

3,622,128
MIXING MEANS FOR LATERALLY CONVEYED RECEPTACLES
Hans Geiser, CH-4914, Bruhlweg 23, Roggwil, Switzerland
Filed Aug. 4, 1970, Ser. No. 60,832
Claims priority, application Switzerland, Aug. 22, 1969, 12744/69
Int. Cl. B01f 11/02
U.S. Cl. 259—56 **10 Claims**



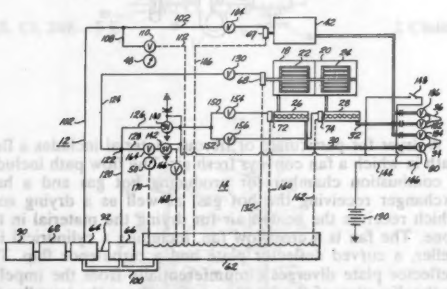
Apparatus for mixing the contents of one or more receptacles during the lateral transport thereof by a horizontal conveyor, characterized by the provision of means for oscillating each receptacle about a vertical axis normal to the longitudinal axis of the conveyor. Each receptacle is carried by an oscillatory unit having receptacle support means and ferromagnetic armature means arranged above and below the conveyor member, respectively, said support and armature means being connected by a vertical axle that extends through a journal opening contained in the conveyor. Rotary drive shaft means mounted beneath and parallel with the conveyor member carry permanent magnet means that cooperate with the armature to effect the desired oscillatory movment of the unit. To maintain the contents at a desired temperature, the conveyor member, the oscillatory unit and at least the lower portion of each receptacle are submerged within temperature-modifying liquid contained in a nonferrous trough beneath which the magnetic drive shaft means are arranged.

3,622,129
MAGNETIC STIRRER APPARATUS
Edward Mazowski, Vineland, N.J., assignor to Bellco Glass Inc., Vineland, N.J.
Filed May 14, 1969, Ser. No. 824,448
Int. Cl. B01f 7/16
U.S. Cl. 259—107 5 Claims



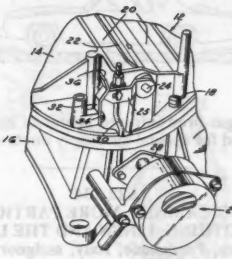
Magnetic stirrer apparatus is disclosed, wherein a shaft extends through the bore of a closure in sealing relation therewith, and a magnetic stirrer bar is rotatably coupled to the closure. In one form of the invention, the stirrer bar is pivoted on the shaft adjacent one end thereof. In another form, the shaft and stirrer bar are pivoted on the closure. Longitudinal adjustment of the shaft in the stopper provides adjustment of the apparatus for use in vessels of various sizes. In one form of the apparatus, the shaft and stirrer bar are wholly encapsulated in chemically inert plastic material, thereby avoiding contamination of stirred matter.

3,622,130
APPARATUS FOR HANDLING AND SPRAYING COATING MATERIAL
Arvid W. Malm, 914 South 48, Tacoma, Wash.
Filed Sept. 18, 1970, Ser. No. 73,368
Int. Cl. B28c 5/06
U.S. Cl. 259—147 10 Claims



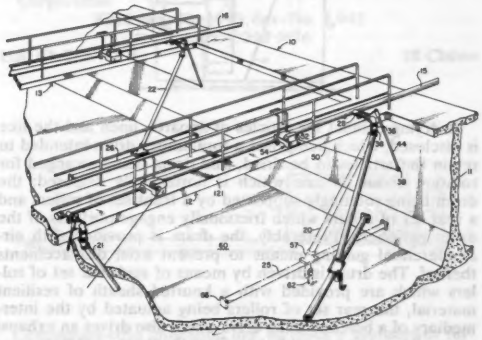
A method and apparatus for mixing, transferring and spraying a cementitious coating material. The apparatus includes a main power source for driving a hydraulic pump, which drives hydraulically a first hydraulic motor for actuating an air pump, a second hydraulic motor for actuating a mixer, and a third and fourth hydraulic motor for actuating impeller pumps. Spray nozzle means are provided with electrical switch means for controlling the transfer of coating material to the nozzle by regulating a hydraulic solenoid valve circuitry between the hydraulic pump and the third and fourth hydraulic motor.

3,622,131
CHOKE PLATE CLOSING RETARDING MEANS FOR A CARBURETOR AUTOMATIC CHOKE
Timothy R. Keenon, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Dec. 15, 1969, Ser. No. 885,157
Int. Cl. F02m 1/10
U.S. Cl. 261—39 B 2 Claims



A choke plate closing retarding means device for a carburetor automatic choke having a thermostatic spring element. A lever arm attached to the choke plate shaft engages a cantilever spring during a portion of lever arm travel which thereby retards initial choke plate closing.

3,622,132
SWING-OUT AERATION APPARATUS WITH LOW-FLOW RESISTANCE
Lawrence James Rawlings, Jr., Bridgeview, Ill., assignor to Chicago Bridge & Iron Company, Aurora, Ill.
Filed Aug. 20, 1969, Ser. No. 851,646
Int. Cl. B01f 3/04
U.S. Cl. 261—124 3 Claims

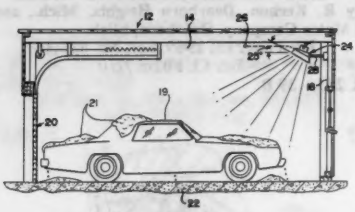


Swing-out air-diffuser assembly requiring only simple lift mechanism, and involving low-pressure drop. A preferred embodiment permits virtually infinite angularity of diffuser in its horizontal, operating plane. Useful in connection with sewage treatment systems.

3,622,133
GARAGE-HEATING SYSTEM
Howard E. Gilbert, Novelty, Ohio, assignor to Van Dorn Company, Cleveland, Ohio
Continuation-in-part of application Ser. No. 750,357, Aug. 5, 1968, now abandoned. This application July 20, 1970, Ser. No. 056,627
Int. Cl. F23l 9/04
U.S. Cl. 263—19 A 7 Claims

A garage-heating system for use with normally closed garages comprising at least one gas-fired infrared heater

mounted on the ceiling of the garage, the normal infiltration of air through a garage outside wall being sufficient to permit



operation of a gas-fired infrared heater of optimum capacity without the need for special air supply ducts or venting.

3,622,134

LINEN-DRYING CABINET, MORE PARTICULARLY FOR CLOTHING, LINEN AND THE LIKE

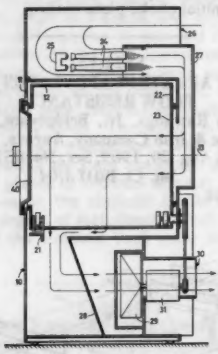
Lamberto Mazza, Pordenone, Italy, assignor to Industrie A. Zanussi S.p.A., Pordenone, Italy

Filed Oct. 28, 1969, Ser. No. 871,829

Claims priority, application Italy, July 19, 1969, 19872A/69

Int. Cl. F27b *7/10*

U.S. Cl. 263—33 B **6 Claims**



A drying cabinet for articles of apparel, linen and the like is disclosed, which comprises a foraminous drum intended to retain the articles to be dried, said drum being arranged for rotation about its axis which is horizontally disposed; the drum being rotatingly supported by a front set of rollers and a rear set of rollers which frictionally engage portions of the drum periphery. Preferably, the drum is provided with circumferential guiding means to prevent axial displacements thereof. The drum is driven by means of said rear set of rollers which are provided with a knurled sheath of resilient material, the rear set of rollers being actuated by the intermediary of a belt and pully drive which also drives an exhaust means for venting spent hot air from the drying cabinet.

A gas burner and a blower are provided to circulate hot air in the interior of the cabinet and in an axial direction with respect to the drum. The gas burners may be provided with piezoelectric firing means.

3,622,135

VACUUM OVEN FOR EVENLY HEATING WORKPIECES

Fritz Bauer, Roth; Fritz Kalbfleisch, Lieblos, and Fritz Krall, Hanau(Main), all of Germany, assignors to Deutsch Gold- und Silber-Scheideanstalt Vormals Roessler, Frankfurt (Main), Germany

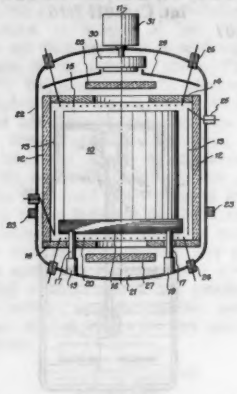
Filed Oct. 2, 1969, Ser. No. 863,306

Claims priority, application Germany, Oct. 3, 1968, P 18 00 782.4

Int. Cl. F27b *3/02, 5/04*

U.S. Cl. 263—40 **4 Claims**

A vacuum tank contains a chamber formed of heat-insulating walls on which the heating elements are mounted. A workpiece supported in said chamber is evenly heated by applying more heat at the bottom of the chamber to compen-



sate for the heat loss due to the frame on which the workpiece is supported.

3,622,136

DRIER FOR PARTICULATE OR FIBROUS MATERIAL

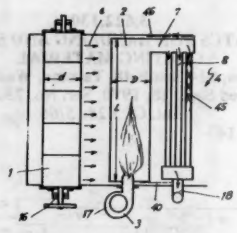
Kurt Zenkner, Hertzstr. 12, Ettlingen, Germany

Filed Dec. 4, 1969, Ser. No. 882,261

Claims priority, application Germany, Dec. 4, 1968, P 18 12 584.3

Int. Cl. F27b *3/10;* **F23l** *15/04*

U.S. Cl. 263—40 R **17 Claims**



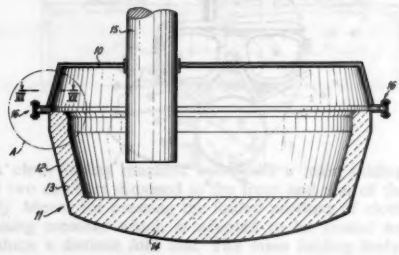
A dryer for particulate or fibrous material includes a flow path in which a fan conveys fresh air. The flow path includes a combustion chamber for producing hot gas and a heat exchanger receiving the hot gas, as well as a drying zone which receives the heated air for drying the material in the zone. The fan is a crossflow fan, including a cylindrical impeller, a curved deflector plate and a turbulence flap. The deflector plate diverges circumferentially from the impeller in the direction of the rotation and encloses the impeller for an angle of about 180°. The tangents to the deflector plate at the circumferential ends enclose an angle less than 90°. The turbulence flap has a surface on the suction side which forms with the impeller circumference a channel widening in the direction of rotation of the impeller, which forms an acute angle with a surface of the flap on the pressure side. The channel provides a partial return current of air to the impeller from the pressure side in a direction substantially tangential to the impeller circumference. The axial length of the impeller is considerably greater than the diameter. The impeller combustion chamber and heat exchanger are contained in a casing of a width corresponding substantially to the length of the impeller. Bearing and drive units for the impeller are located outside the casing.

3,622,137

DEVICE FOR SECURING A FURNACE HEAD TO THE HOUSING OF AN ELECTROTHERMAL FURNACE

Hans Drehsen, Kendenich near Koln; Helmut Ahrens, Kendenich near Koln; Benedikt Georg, Knapsack near Koln, and Kurt Zager, Gleuel near Koln, all of Germany, assignors to Knapsack Aktiengesellschaft, Knapsack bei Koln, Germany

Filed Dec. 23, 1969, Ser. No. 887,533
Claims priority, application Germany, Dec. 23, 1968, P 18 16 488.0
Int. Cl. F23m 5/00; F27d 1/00
U.S. Cl. 263—46 10 Claims



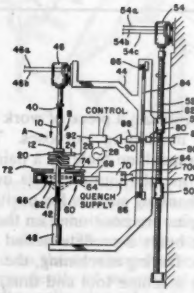
Device for securing a furnace head to the housing of an electrothermal furnace, for example a calcium carbide furnace, wherein the upper rim portion of the furnace housing is arranged to be encircled by a cantilever receiving a layer of insulating bricks to provide support for the water-cooled furnace head. The furnace head is more particularly designed to have a cantilever running parallel to an opposed cantilever fast with the furnace housing, whereby the cantilever secured to the furnace housing and that secured to the furnace head are both arranged to be encircled in a plane common to them by a flange having a ledge secured to it, through interposed insulating material.

3,622,138

CONTROL DEVICE FOR INDUCTION HEATING

Steven P. Kostyal, Chicago, Ill., assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Sept. 16, 1969, Ser. No. 858,471
Int. Cl. C21d 1/10
U.S. Cl. 266—5 E 2 Claims



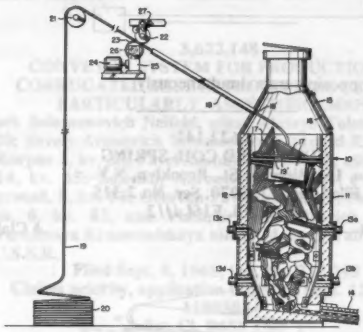
Photocells or other electromagnetic radiation-sensing devices are employed in combination with surface-hardening apparatus, which apparatus comprises an induction unit, a quenching unit, a support for an elongated workpiece and motors for moving and rotating the workpiece through the induction and quenching units, to control any or all functions of the apparatus.

3,622,139

SCRAP ROD FEED SYSTEM

Dale W. Rodolff, Inspiration, Ariz., assignor to Inspiration Consolidated Copper Company, Inspiration, Ariz.

Filed Nov. 14, 1969, Ser. No. 876,673
Int. Cl. C22b 9/00
U.S. Cl. 266—33 S 2 Claims



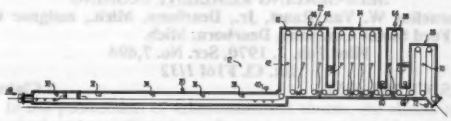
An apparatus is disclosed for efficiently drawing scrap copper rod from a source coil and for guiding the rod into a shaft furnace in which the rod is melted down and for protecting the furnace from harm as additional copper material is fed into the furnace.

3,622,140

CONTINUOUS HEAT TREATING LINE

Crayton H. Schwestka, Michigan City, and Ronald W. Scherer, La Porte, both of Ind., assignors to National Steel Corporation

Filed Jan. 30, 1970, Ser. No. 7,041
Int. Cl. C21d 9/56
U.S. Cl. 266—3 R 18 Claims



Continuous-strip annealing line includes a plurality of furnace-temperature sensors and a plurality of strip-temperature sensors spaced along the pass line. A device is also provided for sensing strip speed. The temperature and speed sensors are sequentially connected to recording means by a programmer, to produce side-by-side profile records of furnace temperature, strip temperature, and strip speed. The profiles show the conditions undergone by an increment of strip as it traverses the furnace.

3,622,141

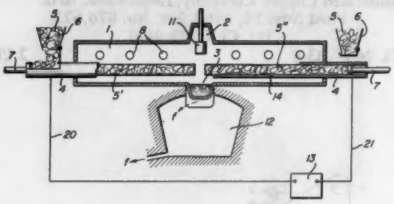
CONTINUOUS METAL MELTING METHOD AND FURNACE THEREFOR

Ugo Brusa, via Borgnia 9, Domodossola, Italy

Filed Oct. 16, 1968, Ser. No. 768,099
Claims priority, application Italy, Nov. 3, 1967, 53593 A/67
Int. Cl. C21b 11/10
U.S. Cl. 266—33 S 3 Claims

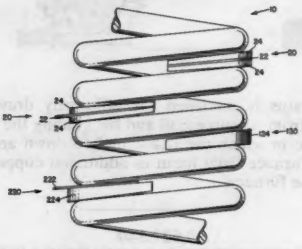
The arc melting process uses no electrode for the melting operation and continuously melts bulks of scrap metal which

have been previously preheated, compressed and fed into a



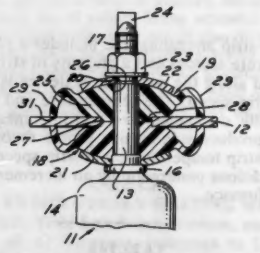
furnace by opposing ends simultaneously.

3,622,142
CUSHIONED COIL SPRING
Angelo Lorio, 161 Bleecker St., Brooklyn, N.Y.
Filed Jan. 12, 1970, Ser. No. 2,315
Int. Cl. F16f 1/12
U.S. Cl. 267—61 **4 Claims**



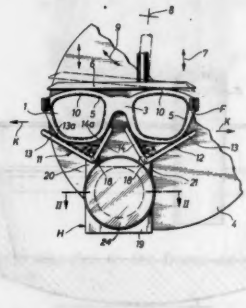
The combination with a coil spring of a semiresilient bumper interposed between adjacent convolutions of the spring, the bumper being wedge shaped and having a large dimension slightly exceeding that of the space between the convolutions for exerting a spreading action thereon.

3,622,143
SELF-SEALING RESILIENT BUSHING
Cornelius W. Van Ranst, Jr., Dearborn, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Feb. 2, 1970, Ser. No. 7,494
Int. Cl. F16f 1/32
U.S. Cl. 267—152 **5 Claims**



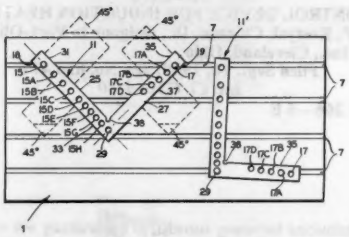
A self-sealing resilient bushing suitable for use in mounting a bayonet end of an automotive shock absorber to a body mounting bracket. The bushing has a flexible flange portion which resiliently engages the body mounting bracket to seal dirt or other foreign matter from the remainder of the bushing.

3,622,144
APPARATUS FOR HOLDING A GLASS MOUNT ON A PLATE-SHAPED SUPPORT
Fritz Kotting, Sturzelberg, Germany, assignor to Firma Wernicke & Co., Dusseldorf-Eller, Germany
Filed Oct. 9, 1969, Ser. No. 865,084
Claims priority, application Germany, Nov. 11, 1968, P 18 07 474.3
Int. Cl. B25b 5/14
U.S. Cl. 269—104 **7 Claims**



A clamping means for securing a glass frame on a flat circular support. The glass frame is held between a straight bar and two angular retaining means which are pivotally secured to a clamping plate. The clamping plate is adjustable and is clamped to the circular support by a manually operated nut.

3,622,145
WORK-POSITIONING MEMBER
Edwin W. Gibson, 72 Barteau Ave., Blue Point, N.Y.
Filed Apr. 19, 1968, Ser. No. 722,734
Int. Cl. B23g 3/18, 3/00
U.S. Cl. 269—297 **12 Claims**



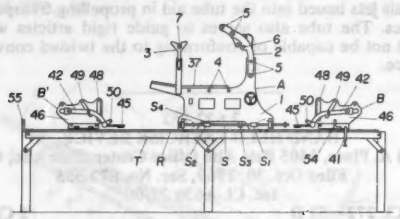
A member for positioning a piece of work in a selected angular position for machining purposes. The member is removably held on a machine table by a pair of locating pins extending from the member into T slots on the table. The member includes a banking surface for positioning a piece of work. The locating pins are positioned on the member so that the banking surface bears a predetermined selected angular relation to the table. During machining, the table moves in a fixed relation to the machine tool and thus, work positioned by the member will be machined at a selected angle. The angle can be adjusted by provision for a plurality of apertures on the member, selected pairs of which may be utilized to adjust the position of the locating pins, and in turn, the position of the banking surface. In the alternative, the angle can be adjusted by providing a plurality of banking surfaces angularly related to each other so that a selected banking surface may be utilized to machine at a selected angle.

3,622,146

CLOTH-FOLDING MACHINE

Shoichi Adachi, 3,3-chome, Oyodocho-Minami, Oyodo-ku, and Sholtiro Kaga, 13,403, Hanaten-cho,, Joto-ku, both of Japan

Filed June 4, 1969, Ser. No. 830,370
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 4 Claims



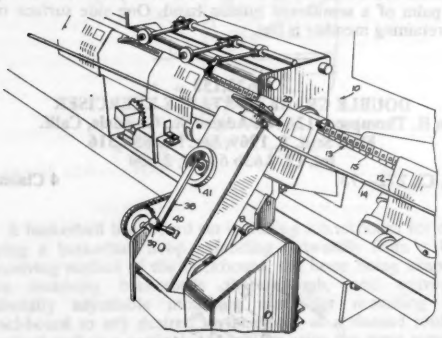
A cloth-folding machine comprises a main folding body and two catchers disposed to the front and rear of the main body. Means for pressing the folded portions of cloth has a pressing member which is adapted to be heated so as to produce a distinct fold line. The main folding body to be reciprocated on a folding table is provided with means for gradually elevating a cloth-folding means in synchronization with the reciprocation. Also provided in the main body is a system for detecting and correcting uneven disposition of cloth edges.

3,622,147

BOOK-CALIPERING MACHINE

Henry R. Mebus, Nazareth, Pa., assignor to Harris-Intertype Corp., Cleveland, Ohio

Filed June 18, 1969, Ser. No. 834,322
Int. Cl. B65h *39/02*
U.S. Cl. 270—54 27 Claims



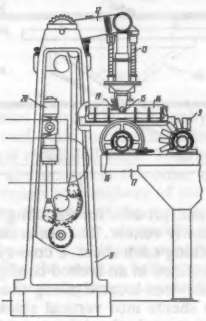
The disclosure relates to a calipering machine for detecting the absence of a predetermined number of gathered signatures. The machine includes a driven calipering wheel and an idler calipering wheel. The driven calipering wheel is movably mounted on the machine frame for movement relative thereto independently of movement of the idler calipering wheel. The idler calipering wheel is supported on a first lever which is pivotable with respect to the calipering machine frame and independent of movement of the driven calipering wheel. A second lever located adjacent the first lever is movable in response to movement of the idler calipering wheel relative to the calipering machine frame. Located on an end of the second lever is a gauge block while a pair of gauge block receptacles are located on a third lever which is cyclically movable towards and away from the gauge block. The gauge block is adapted to pass between the gauge block receptacles as long as the predetermined number of signatures form between the calipering wheels. A switch-actuating mechanism located on the third lever is arranged to actuate a switch whenever interference occurs between the gauge block receptacles and the gauge block as a result of the passage of an incorrect number of signatures between the calipering wheels. Apparatus is also disclosed for recording information pertaining to a detected incorrect number of signatures in order that such information can be used to provide at least one signal that will insure that the group of, or incorrect number of, signatures will not be assembled into a book or magazine.

3,622,148

CONVEYOR SYSTEM FOR PRODUCTION OF CORRUGATED SHEETS FROM FIBROCEMENT, PARTICULARLY, ASBESTOSCEMENT

Mark Solomonovich Neifeld, ulitsa Alexeya Tolstogo, 26, kv. 20; Savely Aronovich Monastyrenko, proezd Rysanova, 27, Korpus 2, kv. 38; Pavel Samuilovich Moroz, ulitsa Mneviki, 14, kv. 65; Solomon Abramovich Azimov, 1 Dmitrovsky proezd, 8, kv. 85; Genrikh Pavlovich Krom, Flotskaya ulitsa, 6, kv. 83, and Vladimir Alexandrovich Voevodsky, Verkhnaya Krasnoselskaya ulitsa, 34, kv. 59, all of, Moscow, U.S.S.R.

Filed Sept. 9, 1968, Ser. No. 758,293
Claims priority, application U.S.S.R., Sept. 12, 1967, 1180502
Int. Cl. B65h *3/08*
U.S. Cl. 271—12 2 Claims



In the production of asbestoscement sheets, the sheets are stacked and transferred one by one to a conveyor by means of a transfer system including a suction head hingedly suspended from a pivotal lever assembly. The suction head is moved by the lever assembly from a position overlying the stack of sheets at which the front end of the topmost sheet is lifted above the stack while the rear end slides therealong as the front end is brought to a position above a roller and is deposited thereon. The roller then conveys the sheet to the subsequent conveyor.

3,622,149

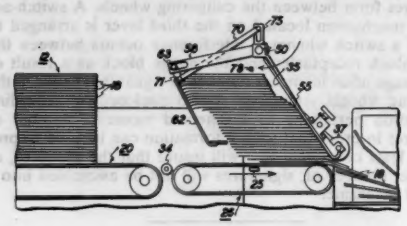
ARTICLE DESTACKING APPARATUS

Albert G. Enskat, Barrington, Ill., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 8, 1969, Ser. No. 864,708
Int. Cl. B65h *3/04*; B65g *59/12*
U.S. Cl. 271—35 6 Claims

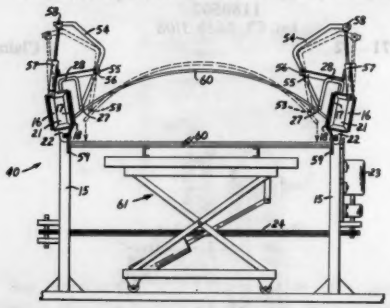
Apparatus for destacking a stack of articles for subsequent handling, the apparatus including a displaceable destack arm arranged to intercept the oversized portion of an article stack; a stack support arm spaced upstream of the destack arm, the stack support arm being normally held out of the path of movement of the article stack; and means responding

to contact of the oversized stack portion with the destack arm to move the stack support arm into supporting position



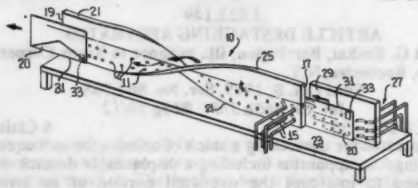
behind the article stack to support the stack during destacking thereof.

3,622,150
SHEET CONVEYING AND STACKING APPARATUS
Leonard L. Hayes, Lewiston, Idaho, assignor to Potlatch Forests, Inc., Lewiston, Idaho
Continuation-in-part of application Ser. No. 773,815, Nov. 6, 1968, now abandoned. This application Oct. 20, 1969, Ser. No. 871,478
Int. Cl. B65h *29/70*
U.S. Cl. 271—68 **13 Claims**



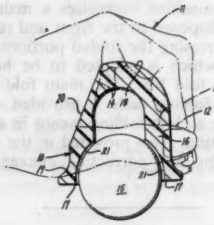
An apparatus and process for handling sheets of resilient materials, particularly veneer. The apparatus includes a feeding device for arching each sheet, a conveying device for the sheets while maintained in an arched configuration and a plurality of release devices located along the conveying device for dropping the sheets into vertical stacks. The conveying apparatus maintains each sheet in an arched configuration transversely across the sheet, maintaining the required rigidity in the sheet without intermediate supports along the conveyor area. The present process of sheet handling involves the steps of transversely arching each sheet, conveying the arched sheets and release of the sheets onto a flat stack.

3,622,151
FLUIDIC LETTER FLIPOVER METHOD AND APPARATUS
Richard J. Range, Silver Spring, and James T. Pfeiffer, Laurel, both of Md., assignors to Bowles Fluidics Corporation, Silver Spring, Md.
Filed Feb. 4, 1970, Ser. No. 8,608
Int. Cl. B65h *29/32*; B65g *47/24*
U.S. Cl. 271—74 **12 Claims**



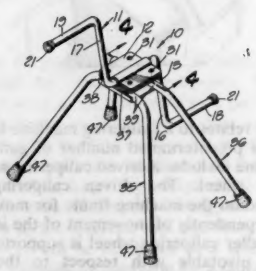
A flipover device for flipping substantially flat articles out-of-plane includes a modified Bernoulli conveyor in which the conveyor surface is twisted out-of-plane in a graduated manner about an axis parallel to a transport path defined along the conveyor surface. Articles received by the conveyor are propelled therealong and attracted thereto by angled air jets issuing from the conveyor surface. The articles follow the surface contour and are thereby rotated out-of-plane. The conveyor may be disposed in a cylindrical guide tube with one longitudinally extending edge of the conveyor being disposed along the central axis of the tube and serving as the axis about which the conveyor surface is twisted. Angled air jets issued into the tube aid in propelling transported articles. The tube also serves to guide rigid articles which might not be capable of conforming to the twisted conveyor surface.

3,622,152
HAND HELD EXERCISE DEVICE
Virgil A. Place, 1405 Palo Alto Office Center, Palo Alto, Calif.
Filed Oct. 30, 1969, Ser. No. 872,555
Int. Cl. A63b *23/00*
U.S. Cl. 272—57 D **2 Claims**



Exercise device for developing coordination, muscle tone, and joint mobility has a single spherical member disposed more than 50 percent of its diameter and in freely rotating engagement within the hemispherical concavity of a concave retaining member. The face surface of the retaining member opposite the concavity is in the form of a projection fitting the palm of a semiflexed human hand. One side surface of the retaining member is flat.

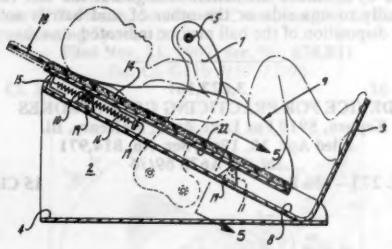
3,622,153
DOUBLE CRANK PORTABLE EXERCISER
John H. Thompson, 124 No. Adams St., Glendale, Calif.
Filed Sept. 2, 1969, Ser. No. 854,516
Int. Cl. A63b *69/16, 23/04*
U.S. Cl. 272—73 **4 Claims**



Two grooved bearing plates rotatably secure a tubular shaft of a double crank between them. The plates are spaced apart vertically to determine the crank friction load. A lubricant wick lies in one groove in contact with the crankshaft. A

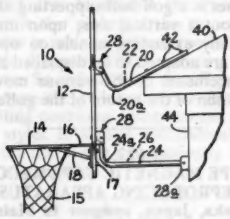
pair of U-shaped legs are held in splayed relationship between top and bottom clamping plates. Elongate fasteners extend through all plates and the legs to unitize the devices.

3,622,154
BABY EXERCISER
Arthur S. Williams, 4044 Hitchcock Road, Concord, Calif.
Filed Apr. 27, 1970, Ser. No. 32,128
Int. Cl. A63b *21/00, 23/04*
U.S. Cl. 272—58 10 Claims



An infant exerciser having a removable cradle spring mounted in a framework on an incline with a footstop and crossbar that allows an infant to exercise his muscles, develop his coordination, and provides a pleasant pastime.

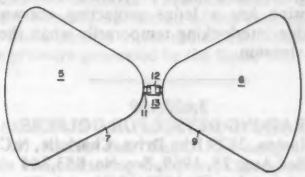
3,622,155
BASKETBALL BACKBOARD SET
James C. Hirsch, Highland Park, Ill., assignor to Coleco Industries, Inc., Hartford, Conn.
Filed Mar. 20, 1969, Ser. No. 808,857
Int. Cl. A63b *63/04*
U.S. Cl. 273—1.5 R 11 Claims



A basketball backboard set including a backboard for carrying a basketball hoop extending outwardly from a ball receiving surface of the backboard, the hoop being adapted for receiving basketballs therethrough, and universal pivotally adjustable mounting arms for mounting the backboard to any desired surface such as a slanted roof, a vertical wall or a vertical standard by using the same mounting brackets. The mounting arms are secured to the back surface of the backboard so as to be universally pivoted so that the arms will adjust to a multitude of mounting situations to conform to the degree of slope of the particular roof to which the backboard set is mounted as well as being adaptable for mounting on a vertical wall of a building or a vertical standard without the need of extra brackets.

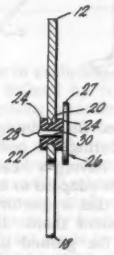
3,622,156
GAME TABLE
Jack H. Pugsley, 1610 S.W. 23rd Ave., Fort Lauderdale, Fla.
Filed May 23, 1969, Ser. No. 827,418
Int. Cl. A63b *39/00*
U.S. Cl. 273—30 3 Claims

A game table for games in which a ball is bounced on a table surface wherein the table is formed of two surfaces separated from each other to provide an open space



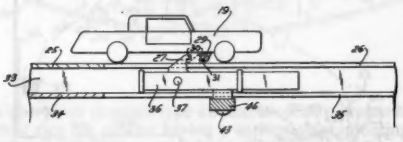
therebetween.

3,622,157
GOLF GREEN REPAIR TOOL AND GOLF BALL MARKER ASSEMBLY
Raymond R. Hatch, Dexter, Mich., assignor to Hatch Stamping Co., Inc., Dexter, Mich.
Filed Feb. 12, 1970, Ser. No. 10,888
Int. Cl. A63b *57/00*
U.S. Cl. 273—32 A 3 Claims



A golf ball position marker is frictionally connected to a golf green repair tool. The marker includes a thin circular head and an integral elongated stem. The tool includes a flat handle at one end and prongs at the other end. An aperture is provided in the repair tool midway of the ends thereof for frictionally retaining the stem of the marker. The repair tool may be made from plastic or aluminum and, when made from aluminum, the aperture therein may include a resilient grommet. By locating the marker between the end portions of the repair tool, advertising space is provided on the handle end of the repair tool.

3,622,158
RACING TOY HAVING VEHICLE-PROPELLING MEANS
Sidney Tepper, Millburn, and Hyman P. Boydman, Springfield, both of N.J., assignors to Topper Corporation
Original application Oct. 30, 1969, Ser. No. 872,655, now Patent No. 3,545,757. Divided and this application June 18, 1970, Ser. No. 47,487
Int. Cl. A63h *18/14*
U.S. Cl. 273—86 D 8 Claims



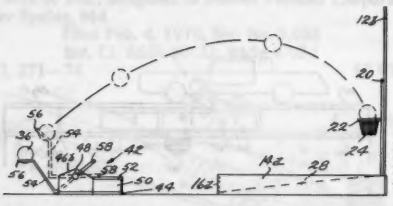
One or more tracks support rollable vehicles each of which moves around the entire track as a result of force applied to it during its movement along a propulsion region. A vehicle-driving member is located beneath, and moves along, each propulsion region in response to movement of a handle operated by a player. The driving member, carries an ele-

ment, e.g., a pawl, for engaging a depending extension on a vehicle and moving the vehicle on the track propulsion region. The element has a finger projecting forwardly and the vehicle extension has a ledge projecting rearwardly, the finger and ledge interlocking temporarily when the element engages the extension.

3,622,159
TRAINING DEVICE FOR GOLFERS
John Fowle Morton, 2829 Irby Drive, Charlotte, N.C.
Filed Aug. 28, 1969, Ser. No. 853,744
Int. Cl. A63b *69/36*
U.S. Cl. 273—183 **3 Claims**

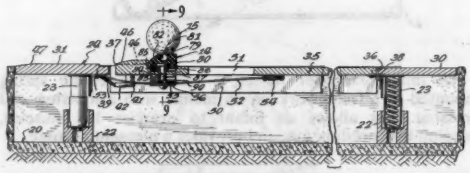
A device is provided for training a player to maintain a fixed head position during the golf swing. The device employs a first element having a head portion formed on an elongated shank that is adapted to be inserted in the ground, and a second element that is apertured for adjustable disposition on the first element shank. In use, the first element shank is inserted in the ground so that the head portion thereon is viewed by a player in alignment with the shank axis when he assumes his stance for a swing, and the second element is adjusted along the shank axis to a disposition at which it is just obscured by the head portion when the latter is viewed from the assumed stance of the player. The first element head portion and the second element are relatively shaped in outline so that parallax and apparent size phenomena allow the second element to remain obscured during the golf swing only as long as a fixed head position is maintained. In particular, one of the outlines, preferably that of the first element head portion, is made oval and the other is made circular to provide the desired relation, and the second element is preferably invested with sharply contrasting surface coloring to provide a readily apparent signal of deviation in head position.

3,622,160
BASKETBALL GAME
William C. Barfield, Box 757, Wilmington, N.C.
Filed Nov. 24, 1969, Ser. No. 879,086
Int. Cl. A63b *65/12*
U.S. Cl. 273—101 **6 Claims**



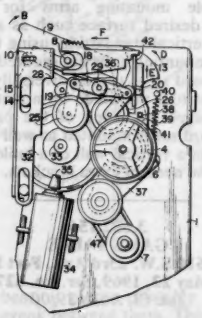
A basketball game and game board construction are described. The game board is mounted in an integrally constructed boxlike container with an end thereof having a length corresponding substantially to the length of the sides of the container so that when said end is folded downwardly, it will form a lid for the container, and when extended upwardly, it will form a backstop for the game ball. The container includes support members which are constructed to angle the game board downwardly proceeding rearwardly from the backboard. A receptacle for receiving the game ball is provided in the game board and means are provided for guiding the game ball into the receptacle. The game ball has printed thereon indicia which indicate scoring and further disposition of the game ball as the game is played. An impeller means is provided for propelling the ball toward the hoop mounted on the backboard, and means are provided for altering the trajectory of the ball. An alternate embodiment is disclosed in which the receptacle in the game board is covered by a barrier element which guides the ball rolling rearwardly to one side or the other of said barrier so that further disposition of the ball may be indicated.

3,622,161
DEVICE FOR PRACTICING GOLF STROKES
Harold Keppen, 5910 Fox Lake Road, McHenry, Ill.
Filed Apr. 10, 1969, Ser. No. 814,971
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 R **15 Claims**



A training device for golfers includes a frame supported on shock-absorbing coil springs. Within the frame is a depressible flap member which has its front end secured to the frame by a hinge and its rear end secured to the frame by a pair of coil springs. The extent to which the flap member is depressed, upon impact by a golf club, is made evident to the golfer by an indicia carrying strip located below the flap member. As the flap member is depressed, the strip moves relative thereto and the indicia thereon may be viewed through a slot in the flap member. Mounted on the rear end of the flap member is a golf ball-supporting element adapted to be moved about a vertical axis, upon impact by a golf club. Longitudinally extending panels on opposite sides of the flap member are adapted to be displaced if impacted by a golf club. Displacements of the various movable members provide an indication of the nature of the golfer's club swing.

3,622,162
CASSETTE-TYPE MAGNETIC TAPE RECORDING AND REPRODUCING APPARATUS
Hisao Ikeda, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 16, 1968, Ser. No. 783,947
Claims priority, application Japan, Feb. 12, 1968, 43/9323, 43/9327, 43/10725, 43/10726
Int. Cl. G11b *15/44*
U.S. Cl. 274—4 C **4 Claims**



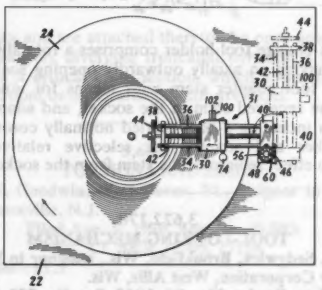
A cassette-type magnetic tape recording and reproducing apparatus wherein secondary operation-switching means is

cooperatively associated with primary operation switching means for shifting a tape driving system to a different state of operation, such as a state of recording or reproduction, a state of rewinding or a state of fast forwarding, in such a manner that when said primary operation-switching means is switched to a rewinding position, the state of rewinding and the state of fast forwarding are obtained selectively depending upon the position of said secondary operation-switching means, and which therefore is compact in structure and has the function of a cassette-type tape recorder.

3,622,163
PHONOGRAPH RECORD PLAYER

William S. Bachman, Southport, Conn., assignor to Columbia Broadcasting System, Inc.

Filed Nov. 21, 1969, Ser. No. 878,811
Int. Cl. G11b *3/10, 17/06*
U.S. Cl. 274—13 R **10 Claims**

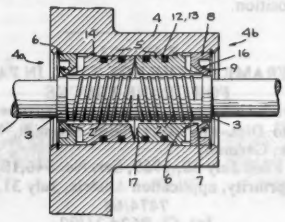


A record player has a phonograph pickup mounted directly on a carriage which is adapted to be propelled radially across a record by drive means including a half-nut on the carriage engageable with an eccentric lead screw. In the event the speed of the carriage differs from the speed of advancement of the pickup stylus, positional disagreement between the pickup and the carriage occurs which is sensed mechanically and acts to disable the carriage drive temporarily to permit the pickup stylus to catch up. In this fashion, the stylus is maintained substantially tangent to the record groove at all times without exerting side pressure on the record groove. So called "fast" runoff grooves at the end of the record cause the stylus to move faster than the carriage. The resulting positional disagreement between the carriage and the stylus is sensed mechanically and actuates mechanism to lift the stylus automatically from the record when playback is completed.

3,622,164
SEAL FOR SHAFTS

Werner Karl Herbert, and Guenther Lehn, both of Stetton, Germany, assignors to Dornier Systems GmbH, Friedrichshafen, Germany

Filed Mar. 30, 1970, Ser. No. 23,775
Claims priority, application Germany, Mar. 28, 1969, P 19 15 934.3
Int. Cl. F16j *15/16*
U.S. Cl. 277—27 **10 Claims**

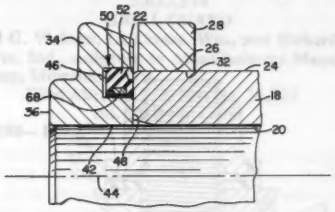


The shaft is sealed by a combination seal which includes a liquid seal for high-shaft speeds and a radial seal for low-shaft speeds or standstill. The liquid seal is effected by the windings on the shaft which directs liquid into the chamber between the two windings. The radial seal is lifted from the shaft by the outward movement of the bushing at high-shaft speeds to avoid damage to the radial seal. The bushing moves under the pressure generated by the liquid seal.

3,622,165
SEAL FOR TRACK PINS AND THE LIKE

Seymour A. Hatch, Oak Park, Ill., assignor to Chicago Rawhide Manufacturing Company, Chicago, Ill.

Filed Apr. 24, 1969, Ser. No. 819,042
Int. Cl. F16j *15/38;* **B62d** *55/08;* **B60s** *1/62*
U.S. Cl. 277—95 **8 Claims**

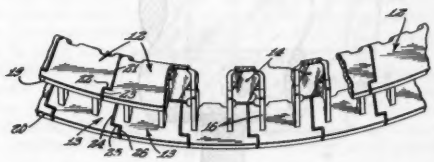


A seal assembly for use in excluding mud, dirt and the like from an interior space defined by two relatively movable machine elements, comprising a resilient sealing ring having one outwardly facing mounting surface for reception in a machine bore, and a second axially directed end face sealing surface for engaging an oppositely directed, cooperating face of a machine element in a sealing relation. The mounting surface and the sealing surface are axially offset from each other and joined by an at least partially frustoconical body portion so that axially applied thrust tends to deform the seal ring, which is held against axial movement, either radially inwardly or outwardly. A relatively stiff support ring extends around an inner portion of the seal body to prevent inward radial deformation upon the application of the compressive radial loads, so that an end loading force creates a tight seal between the seal ring and the bore. Preferably, the seal body is formed with a recess or reentrant which permits removable reception of the ring therein prior to assembling the elements to apply the axially directed load between an end sealing face on the seal body and a corresponding face on one machine element.

3,622,166
CIRCUMFERENTIALLY EXPANSIBLE PISTON RING

Arthur M. Brenneke, New Castle, Ind., assignor to TRW Inc., Cleveland, Ohio

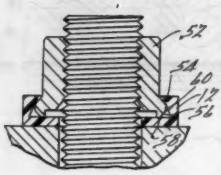
Filed June 25, 1970, Ser. No. 49,728
Int. Cl. F16j *9/20*
U.S. Cl. 277—138 **7 Claims**



A one-piece channel-type circumferentially expansible oil-control ring for pistons having a spring and reinforcing strut structure isolated from the portions of the ring which contact the piston and the cylinder. The ring has axially separated top and bottom rows of circumferentially separated radially extending segments or crowns held in axially spaced relation and having the crowns or segments of one row connected to circumferentially offset crowns in the other row by inclined legs on the inner periphery and also by reinforcing struts projecting between the rows. The crown, legs, and struts are so

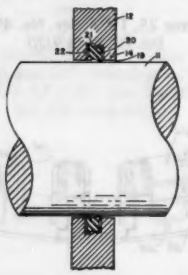
related as to minimize loss of metal strip stock from which the rings are formed and so as to eliminate the necessity for reducing the length of the stock to form the rings. The formation of the rings from the strip stock does not require length reducing folding so that the circumferential length of the finished ring is the same as the axial length of the original strip stock from which the ring was formed.

3,622,167
SEALING FASTENER ASSEMBLY
Arthur E. Velthoven, Warren, Mich., assignor to Federal Screw Works, Detroit, Mich.
Filed Feb. 9, 1970, Ser. No. 9,673
Int. Cl. F16j *15/10*; F16b *43/00*
U.S. Cl. 277—166 **6 Claims**



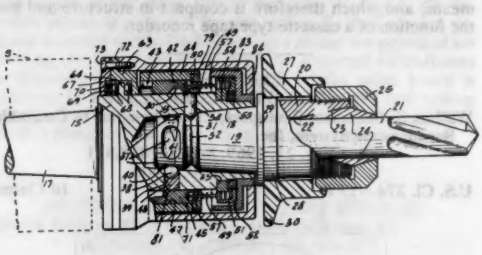
A sealing fastener assembly in which a generally washer-shaped plastic seal is snap fitted over the flange of a threaded metal fastener such as a nut, screw or bolt. When the fastener is tightened, the seal is extruded into engagement with the fastener threads to seal the fastened joint against fluid leakage. In one form of the invention, the outer periphery of the seal is caused to roll upwardly to expose a dissimilarly colored area of the seal and thereby indicate that the fastener has been properly tightened.

3,622,168
ROTARY SHAFT SEAL MEANS
George V. Woodling, 22077 West Lake Road, Rocky River, Ohio
Filed July 16, 1970, Ser. No. 55,383
Int. Cl. F16j *9/02*; F16r *41/00*
U.S. Cl. 277—168 **6 Claims**



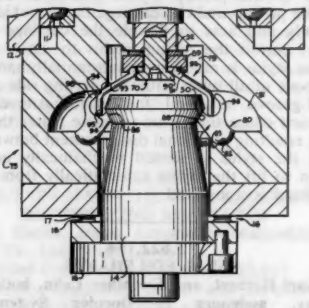
Fluid seal means for a shaft mounted in annular space surrounding the shaft. The fluid seal comprises an O-ring of rubberlike material having substantially a square cross section, defining first and second end sections with each end section having a pair of crown corners. The pair of crown corners on the first end section constitutes a sealing section. The pair of crown corners on the second end section constitutes a non-sealing section.

3,622,169
QUICK-CHANGE TOOL HOLDER
Roland G. Koch, and Allen E. Nickless, both of Frankenmuth, Mich., assignors to Hoadaille Industries, Inc., Buffalo, N.Y.
Filed Sept. 9, 1969, Ser. No. 856,263
Int. Cl. B23b *31/06*
U.S. Cl. 279—1 B **20 Claims**



A quick-change tool holder comprises a rotatably drivable member having an axially outwardly opening socket receptive of a tool adapter stem with means for automatically locking the received stem in the socket, and adapter-releasing means including a part carried normally corotatively by the member and adapted for selective relative rotation thereon to effect release of the stem from the socket.

3,622,170
TOOL-LOCKING MECHANISM
Robert K. Sedgwick, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.
Original application May 20, 1968, Ser. No. 730,440, now Patent No. 3,533,638. Divided and this application Jan. 7, 1970, Ser. No. 1,237
Int. Cl. B23b *31/10*
U.S. Cl. 279—89 **5 Claims**

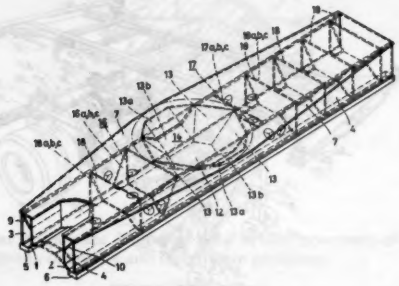


A plurality of latches are utilized within the spindle of a machine tool to pivotally engage a bearing surface on a tool arbor. Within the arbor cavity of the spindle, there is provided an actuator mechanism which is attached to a drawbar operable to effect the movement of the latches into and out of locking position.

3,622,171
HOLLOW FRAME OF THE BOX TYPE, IN PARTICULAR FOR CRANE TRUCKS
Georg Heinrich Gottschalk, Bullach near Nurnberg, Germany, assignor to Dipl.-Ing. Karl Heinz Schmidt, Vorra, Kreis, Hersbruck, Germany
Filed July 30, 1969, Ser. No. 846,184
Claims priority, application Austria, July 31, 1968, A 7474/68
Int. Cl. B62d *21/00*
U.S. Cl. 280—106 **6 Claims**

A hollow vehicle frame, especially suited for crane vehicles, which is made of continuous flat longitudinal plates and

transverse bulkheads. The longitudinal plates define a cross-sectional hollow "U" shape frame cavity, concave downwardly. The bulkheads are longitudinally spaced along the frame, have a periphery commensurate in shape to the

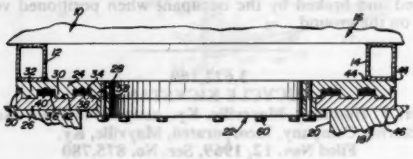


frame cavity and are attached thereto. An open space shaped like an upwardly diverging truncated pyramid is located in the area of a critical cross section, which is the area where the crane boom or other attachments are fixed.

3,622,172
TORSION LAND SKIER
Charles W. Goodwin, West Dover, Vt., assignor to Turf Ski, Inc., Somerville, N.J.
Filed Apr. 9, 1970, Ser. No. 26,883
Int. Cl. A63c *17/06, 17/14*
U.S. Cl. 280—11.2 **1 Claim**

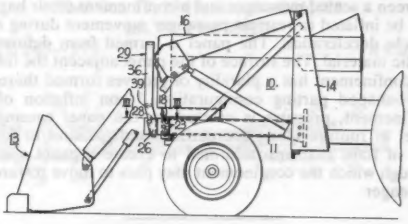
A land skier of a resilient plastic material molded into a shell-shaped substantially like a ski with lateral sides that depend down from an upper skier supporting surface in the shape of an upside down U with a plurality of ball bearing rollers having beveled cylindrical surfaces mounted between the sides of the shell beneath the foot of the skier. The forward end of the shell is curved upwardly like a ski with the foremost roller mounted in the upwardly curved portion and the lower rear edges of the shell taper upwardly toward the rear with a plastic braking surface mounted between the sides of the shell.

3,622,173
FULL TRAILER FIFTH WHEEL WITH GREASE RESERVOIR
Donald W. Hodgson, 1646 10th St., Arcata, Calif.
Continuation-in-part of application Ser. No. 771,263, Oct. 28, 1968, now abandoned, which is a continuation-in-part of application Ser. No. 679,482, Oct. 31, 1967, Pat. No. 3,463,512. This application Oct. 29, 1969, Ser. No. 872,138
Int. Cl. B62d *53/00*
U.S. Cl. 280—125 **5 Claims**



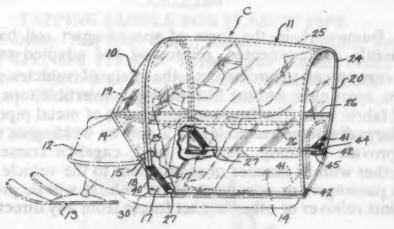
A pair of annular plates for securement to a full trailer frame and the front axle bolster of the frame and including opposing concentric circular grooves and ridges. The ridges formed on one of the plates are nested in the grooves of the other plate and retaining structure is provided for preventing axial separation of the plates. In addition, the bottom surfaces of each of the grooves have circumferentially spaced recesses or relieved areas formed therein and the upper faces of the ridges are also provided with similar circumferentially spaced recesses or relieved areas. The relieved areas in the grooves and ridges are spaced relative to each other in a manner such that they are out of registry when the steerable front wheels of the trailer are positioned in straight-ahead positions and the plates include lubricating passages through which lubricating material may be forced between the opposing axially facing surfaces of the grooves and ridges.

3,622,174
GRILL GUARD
Raymond G. Wakeen, La Crosse, Wis., and Richard G. Moe, La Porte, Ind., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.
Filed Apr. 1, 1970, Ser. No. 24,502
Int. Cl. B60r *11/00*
U.S. Cl. 280—150 F **1 Claim**



A readily removable or mountable grill guard for a tractor wherein the guard is provided with tapered depending members received within complementary sockets carried by the tractor and such frictional connection between socket and member forming the only connection between tractor and guard.

3,622,175
SAFETY CANOPY FOR SNOWMOBILES
Robert F. Benz, Milwaukee, Wis., and Philip J. Pearson, 5104 N. Lovers Lane Road, Milwaukee, Wis.
Filed Jan. 29, 1970, Ser. No. 6,844
Int. Cl. B62d *33/06*
U.S. Cl. 280—150 R **2 Claims**



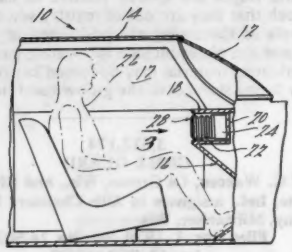
A combination safety canopy and roll bar construction for snowmobiles which has a suitable framework either pivotably or slidably mounted on either side of the snowmobile frame to allow for the ingress and egress of passengers. The framework being integral with a solid transparent shield forming the canopy per se, and acts to contain and provide heat from the engine for the snowmobile occupants. The frame has U-shaped members of sufficient strength and so constructed and arranged as to form roll bars for the protection of the individuals, should the vehicle overturn.

3,622,176

MOTOR VEHICLE INSTRUMENT PANEL ELEMENT

Lawrence C. Byer, Farmington, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Feb. 5, 1970, Ser. No. 8,789
Int. Cl. B60r 21/10
U.S. Cl. 280—150 AB 5 Claims



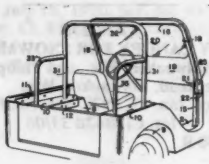
A one-piece, decorative panel adapted to be included in a motor vehicle instrument panel assembly and be positioned between a seated passenger and a confinement or air bag that may be inflated to restrain passenger movement during rapid vehicle deceleration. The panel is formed from deformable plastic material. The surface of the panel adjacent the inflatable confinement has a plurality of grooves formed therein in an H-shaped parting configuration. Upon inflation of the confinement, pressure is exerted on the panel causing the panel to rupture along the parting configuration to form a pair of flaps that are deformed to create a panel aperture through which the confinement may pass to move toward the passenger.

3,622,177

ROLL BAR CAGE FOR VEHICLES

Richard Lee Notestine, 6654 S.E. Flavel St., Portland, Oreg., and Lee F. Coleman, Portland, Oreg.

Filed Oct. 20, 1969, Ser. No. 867,462
Int. Cl. B60r 27/00
U.S. Cl. 280—150 C 1 Claim



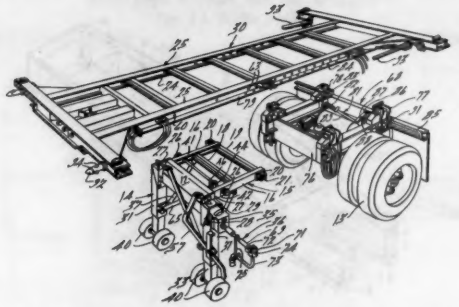
A framework in the form of spaced-apart roll bars permanently interconnected, reinforced and adapted as a unit for convenient securement to the body of vehicles such as jeeps, sport cars, and the like, having convertible tops, full or half fabric tops. The framework is made of metal pipes all of uniform diameter assembled as a unit by welding or the like to provide a strong, durable, rigid, cagelike frame which together with its manner of securement to the vehicle is such that passengers or occupants of the vehicle will be protected against rollover or other impact forces from any direction.

3,622,178

LONGITUDINALLY MOVABLE LANDING GEAR FOR TRAILERS AND THE LIKE

Keith W. Tantlinger, Grosse Pointe Shores; George Chieger, Birmingham, and Adam D. Sweda, Grosse Pointe Farms, all of Mich., assignors to Fruehauf Corporation, Detroit, Mich.

Filed July 9, 1969, Ser. No. 840,328
Int. Cl. B60s 9/00
U.S. Cl. 280—150.5 7 Claims



The landing gear for a container chassis frame is movable to and from ground-engaged position and when the bogies for the wheels are to be shifted to different positions on coupled and uncoupled frames, the landing gear may also be shifted to conform to the new position of the wheels.

3,622,179

OCCUPANT-DRIVEN OPEN WHEEL DEVICE

Winfred C. Pfersick, 1660 Nelson Drive, Santa Clara, Calif.

Continuation-in-part of application Ser. No. 794,843, Jan. 24, 1970, now abandoned. This application July 23, 1970, Ser. No. 57,578
Int. Cl. B62k 1/00
U.S. Cl. 280—207 9 Claims

An occupant-driven open gyral wheel has an outwardly curved transverse riding surface and a pair of circular tracks formed by bosses projecting from the inside surface of the open wheel. A pair of foot skates is provided that has skate wheels with concave surfaces for riding on the circular tracks, and has holding means operably connected to the skate wheels to allow the skate wheels to only move backwards with respect to their circular tracks. The foot skates have guide members positioned within alignment slots in the open wheel, and each foot skate has a frame member and a runner member hingedly connected together at their forward ends. The open gyral wheel can be moved forward, steered and braked by the occupant when positioned vertically on the ground.

3,622,180

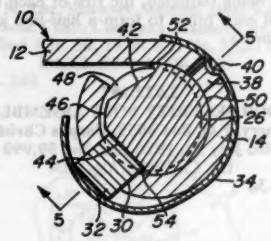
BICYCLE KICKSTAND

Robert F. Humlong, Maysville, Ky., assignor to Wald Manufacturing Company, Incorporated, Mayville, Ky.

Filed Nov. 12, 1969, Ser. No. 875,780
Int. Cl. B62h 1/02
U.S. Cl. 280—301 13 Claims

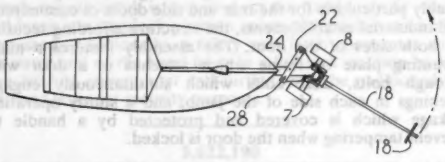
The kickstand incorporates a supporting leg having a journal portion pressure formed in a single operation to provide

flat seat faces yieldingly engageable by a flat face of a detent



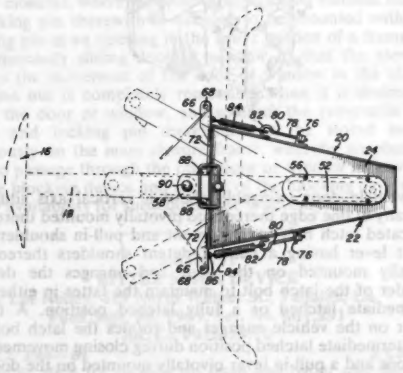
member, to provide a superior snap action movement of the leg between operative and inoperative positions.

3,622,181
UNIVERSAL BOAT LAUNCHER
Robert D. Smith, 2401 N. 68 St., Scottsdale, Ariz.
Filed July 6, 1970, Ser. No. 52,540
Int. Cl. B62d *53/00*
U.S. Cl. 280—476 **6 Claims**



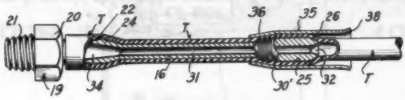
A vehicular device for the safe, efficient and convenient launching of small pleasure boats and the like from soft ground or from dirt ramps. The vehicle comprises a substantially rectangular steel frame, wheels attached thereto, a centrally located steel ball for receiving the boat trailer tongue, guide means for said tongue, and handle means one end of which is adapted to fit into a specially shaped recess in said vehicle, and the other end of which is adapted to provide the manual force and guidance for controlling the launching of the boat.

3,622,182
WIDE-RANGE TOW HITCH
Tony W. Grosse-Rhode, 8233 Keystone Drive, Omaha, Nebr.
Filed Nov. 13, 1969, Ser. No. 876,530
Int. Cl. B60d *1/00*
U.S. Cl. 280—478 A **16 Claims**



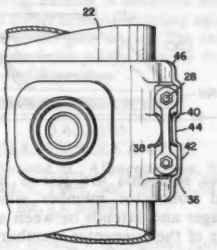
An elongated hitch bar housing having front and rear ends including front longitudinally extending guide means and rear horizontal transverse guide means, respectively. An elongated hitch bar is disposed lengthwise of the housing and including front follower means guidingly engaged with the front guide means and its rear end is longitudinally shiftable relative to and guidingly engaged with the rear guide means for limited horizontal swinging movement to opposite sides of a center position. In addition, the rear end of the housing includes swingable abutment arms pivotally supported at one pair of ends from remote sides of the rear guide means with the other pair of ends thereof projecting toward each other and juxtaposition the opposite sides of the rear end of the bar when the latter is horizontally centered. The other pair of ends of the arms are swingable rearwardly and outwardly away from each other to provide clearance therebetween for horizontal swinging movement of the rear end of the bar as the latter is displaced rearwardly from its forwardmost limit position and the arms are spring biased to generally aligned positions with their free-swinging ends closely opposing the opposite sides of the rear end of the bar.

3,622,183
COUPLING ASSEMBLY FOR FLEXIBLE TUBING
James C. White, P. O. Box 5495, Station B, Greenville, S.C.
Filed Oct. 15, 1969, Ser. No. 866,485
Int. Cl. F16l *33/20*
U.S. Cl. 285—179 **8 Claims**



A tubular coupling for connection with high-pressure or vacuum tubing including a hollow elongate connector member and a locking member slidably received thereon. The elongate connector member includes a bendable reduced-diameter central portion and an enlarged bulbous portion at one end thereof. The locking member is a hollow sleeve tapered at one end to be slidably received along the reduced-diameter central portion of the connector member while the main body thereof is slidably received over the bulbous portion of the connector member. When flexible tubing is inserted over the bulbous portion and reduced-diameter portion of the connector member, the sleeve can be slid over the tubing to clamp the tubing to the connector member and the connector member bent in the reduced-diameter portion to provide a noncollapsible bend in the tubing.

3,622,184
TAPPING SADDLE FOR PLASTIC PIPE
John H. Deasy, San Jose, Calif.; Robert B. Williams, Texarkana, Tex., and Frank E. Turner, San Mateo, Calif., assignors to Smith-Blair Inc., South San Francisco, Calif.
Filed May 14, 1970, Ser. No. 37,099
Int. Cl. F16l *41/00*
U.S. Cl. 285—197 **8 Claims**



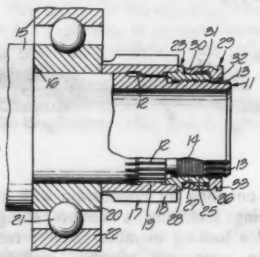
A pipe saddle particularly adapted for making a side tap in plastic pipe comprises top and bottom strap members with

curved back end portions forming recesses for cooperating bar washers that conform to and seat within the recesses. Bolts extend through the bar washers and end portions of the strap members to hold them together around the pipe. The top strap member is formed with an outwardly bulging portion forming a recess around a central opening. A plastic outlet member has a base portion that seats in said recess and an integral annular boss portion that extends through the strap opening. The outlet base portion has an inner surface contour providing space for an annular gasket that seals around a side opening in the plastic pipe aligned with the annular neck of the outlet. The gasket is forced into sealing position around pipe opening when the strap bolts are tightened.

3,622,185
LOCKING ASSEMBLY FOR HIGH-SPEED SHAFTS

Jose Rosan, Sr., San Juan Capistrano; Robert D. Weber, Costa Mesa, and Marvin P. Reece, Dana Point, all of Calif., assignors to Rosan, Inc., Newport Beach, Calif., by said Reece and said Weber

Continuation of application Ser. No. 743,999, July 11, 1968, now abandoned. This application June 2, 1969, Ser. No. 834,199
Int. Cl. F16d *1/06*
U.S. Cl. 287—53 **19 Claims**

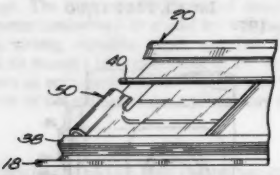


A substantially unitary or integral locking assembly for securely locking members onto a high-speed shaft by a locking nut threadedly engaged with said high-speed shaft and a locking sleeve which is attached to said locking nut by a swaged portion thereof while in simultaneous splined engagement with said locking nut and said high-speed shaft.

3,622,186
CHEVRON CONNECTOR

John F. Newell, Madison; Walter M. Hassenplug, Madison, and Reuben A. Zahler, Verona, all of Wis., assignors to Wehr Corporation, Milwaukee, Wis.

Filed Nov. 26, 1969, Ser. No. 880,027
Int. Cl. F16b *7/00*
U.S. Cl. 287—189.36H **2 Claims**

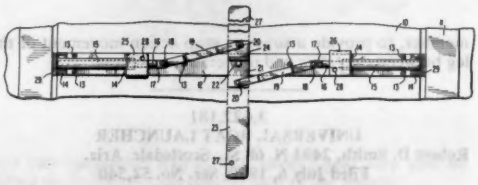


Louver frame segments are joined mechanically by a chevron-shaped connector member which is inserted in restricted passages and extends between abutting frame segments. The legs of the connector member have a compound angular relationship in that they are at an angle to each other in addition to the basic angle attributing the chevron shape. The legs have a nonplanar configuration attributed thereto by upset ribs offset toward like edges of their respective legs. The ribs are flattened in the restricted passages to thereby establish a positive wedge connection between the frame segments and, in being flattened, the ribs of each leg generally expand toward each other to form a hair-line joint between the frame segments.

3,622,187
DOOR SECURITY BOLT ASSEMBLY

William L. Emery, P.O. Box 6058, Corpus Christi, Tex.

Filed July 31, 1970, Ser. No. 59,990
Int. Cl. E05c *1/06, 9/04*
U.S. Cl. 292—36 **8 Claims**

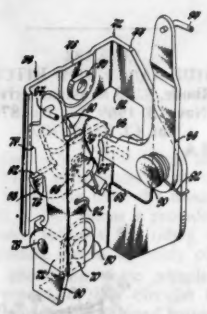


A simplified self-contained high-strength security bolt assembly particularly for the rear and side doors of commercial and industrial establishments, the structure affording security on both sides of the door. The assembly features a main mounting plate or frame which attaches to a door with through bolts, dual bolts which simultaneously engage openings in each side of the jamb, and a sturdy operating linkage which is covered and protected by a handle to prevent tampering when the door is locked.

3,622,188
DOOR-LATCHING ARRANGEMENT

Lester M. Goeman, Grosse Pointe Woods, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Mar. 5, 1970, Ser. No. 16,713
Int. Cl. E05c *3/26*
U.S. Cl. 292—216 **4 Claims**



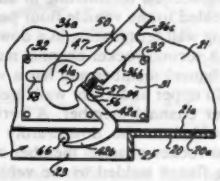
A vehicle door swingable about a vertical axis situated generally at one edge thereof has pivotally mounted therein a bifurcated latch bolt having detent and pull-in shoulders. A detent lever having a pair of detent shoulders thereon is pivotally mounted on the door and engages the detent shoulder of the latch bolt to maintain the latter in either an intermediate latched or a fully latched position. A fixed striker on the vehicle engages and rotates the latch bolt to the intermediate latched position during closing movement of the door and a pull-in lever pivotally mounted on the door is operable to engage the pull-in shoulder on the latch bolt to rotate the latch bolt from the intermediate latched to the fully latched position to thereby forcibly draw the door into the door opening.

3,622,189

ROLL UP TRUCK DOOR LOCK AND LATCH

Ernest Rosehitz, Kansas City; Grady L. Clyma, Kansas City, and Ernest M. Lee, Shawnee Mission, all of Kans., assignors to Roll-O-Matic Chain Company, Kansas City, Mo.

Filed Apr. 30, 1970, Ser. No. 33,317
Int. Cl. E05c *13/02, 3/10*
U.S. Cl. 292—240 7 Claims



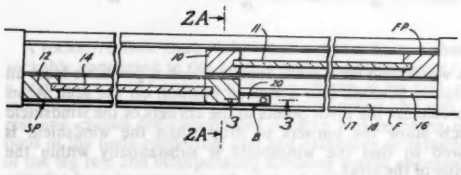
A self-adjustable latch and lock device for slidable closures, most particularly for the overhead rear door on a truck, adapted for single hand operation in opening and closing the same. Associated with a pivotal hand lever is a hook arm biased by a resilient compression spring to engagement with a keeper post recessed in the sill of a truck floor. A thumb release catch is mounted on the hand lever to retain said lever in a semilock position unless the catch is manually depressed. Additionally, a safety cam latch cooperates with the outer end of the hand lever in a full-lock position to ensure latched engagement and further, may be padlocked to the hand lever for security purposes.

3,622,190

BLOCKING DEVICE FOR LOCKING HORIZONTALLY SLIDING DOORS AND WINDOWS

John L. Mohun, 6215 Fondren Road Apt. 203, Houston, Tex.

Filed June 15, 1970, Ser. No. 46,103
Int. Cl. E05c *19/18*; E05d *13/06*
U.S. Cl. 292—288 9 Claims



Blocking device for locking sliding doors, windows, and other closures, wherein a removable blocking element having a locking pin therewith is adapted to be mounted with the locking pin in an opening in the lower portion of a frame for a horizontally sliding door or window so that the element blocks the movement of the door or window in the closed position but is completely removable when it is desired to open the door or window, and wherein the removable element and locking pin therewith may be stored inconspicuously on the main closure frame, whereby no obstruction to passage through the open door or window is provided by the blocking device and storage of the blocking device for ready availability for subsequent use is accomplished.

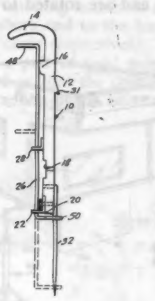
3,622,191

LITTER STICK DEVICE

Elliott Lee Nolley, 419 North Walnut St., Tallulah, La.

Filed Sept. 26, 1969, Ser. No. 861,291
Int. Cl. F41b *13/10*
U.S. Cl. 294—61 5 Claims

A litter stick for picking up trash and paper and the like comprising an elongated body member with handle means on the top thereof and a detachable adjustable metal pointed shaft means on the bottom thereof with slide means operatively connected to fork means secured to the body member for sliding parallel to the body member and the adjustable metal pointed shaft to remove trash and the like that has been impaled upon said metal pointed shaft.

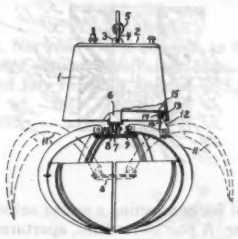


3,622,192

MULTIBLADE GRAB

Sven E. Hansen, 4300 Osterled, 20, Holbaek, Denmark

Filed Nov. 10, 1969, Ser. No. 875,367
Claims priority, application Denmark, Oct. 9, 1969, 5,366/69
Int. Cl. B66c *3/04*
U.S. Cl. 294—106 4 Claims



A grapple adapted to be suspended to a hoisting means such as a crane-hook or a wire-block, the said grapple comprises a housing open at the bottom and is provided with a plurality of radially and star-shaped grab blades and an electromagnetically operated valve and a drive mechanism for operating the blades. The drive mechanism consists of an electric motor coupled to a pump arranged to produce operating pressure in a hydraulic cylinder and thus to operate a piston to which is attached a crosshead, each of the grab blades being pivotally attached at one end to the crosshead, and each blade being pivotally mounted on an axle at an intermediate point to an intermediate link each intermediate link being pivotally attached to the housing, so that up-and-down movements of the crosshead closes and opens the grab blades. An inner collar bearing is mounted around the axle, each end of the said collar bearing abutting against sideplates located on each side of the grab blades. The collar is adapted to keep the said sideplates safely spaced from the blade under even very powerful stresses.

3,622,193

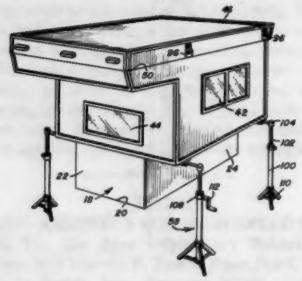
COLLAPSIBLE CAMPER

Leo Schmidt, 8500 Second St., Alburquerque, N. Mex.

Filed Oct. 6, 1969, Ser. No. 863,981
Int. Cl. B60p *3/34*
U.S. Cl. 296—23 4 Claims

A camper structure having a collapsible roof and adapted to be hauled in a pickup vehicle. The roof includes a top member normally contacting the sidewalls of the camper when minimum clearance is required. A bellows is

peripherally disposed between the top member and sidewalls thereby allowing the raising of the top member in a sealed manner. Telescoping jacks are pivotally mounted to the camper sidewalls and are rotated to contact the ground for



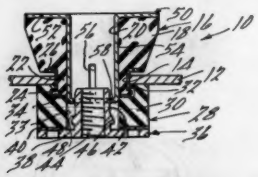
supporting the camper during nonuse when the pickup vehicle slides out from under the camper. The jacks can be rotated to engage the roof and are adjusted so that the roof can be maintained in an elevated condition.

3,622,194

MOTOR VEHICLE BODY MOUNT

William Bryk, Detroit, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 29, 1969, Ser. No. 888,325
Int. Cl. B62d 27/04
U.S. Cl. 296—35 R 6 Claims



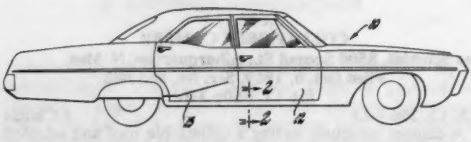
A body mount for connecting a motor vehicle body part to the vehicle frame. A pair of resilient, apertured insulators are positioned on either side of the frame with the insulator apertures in registry with a frame aperture. The configurations of the insulators allow them to be interlocked and held in position for preassembly without the aid of a fixture. Upper and lower retaining elements bear on the outer surfaces of the insulators and each retaining element includes a projection extending into the insulator apertures. Formed on these projections are snap action connectors that become engaged upon the retaining elements being moved toward one another during compression and preloading of the insulators. One of the retaining element projections includes a threaded sleeve portion that receives a bolt that extends from the body part.

3,622,195

VEHICLE FRAME AND BODY CONSTRUCTION

Charles S. Lautenbach, Rochester, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Jan. 22, 1970, Ser. No. 881,304
Int. Cl. B62d 27/04, 21/02
U.S. Cl. 296—35 R 5 Claims



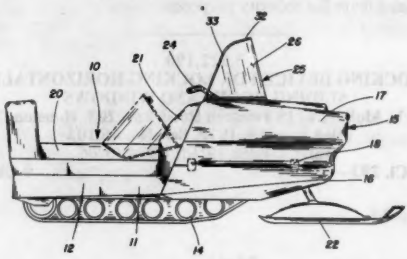
A vehicle frame and body construction includes a generally U-shaped upwardly opening sill that has inner and outer sill members. The inner sill member has a vertical base section terminating in upper and lower inwardly extending lateral flanges. The outer sill member has a vertical wall section having an upper outwardly extending lateral flange and having a lower inwardly extending stepped portion including a lower lateral flange secured to the lower lateral flange of the inner sill member. A generally closed rectangular rocker structure is mounted on the vehicle frame and is received within the upwardly opening sill in a spaced relationship. The rocker structure includes a first rocker channel member that has a vertical base section terminating in an upper inwardly extending wall welded to the vehicle floor pan and in a lower inwardly extending wall terminating in a downwardly extending plate flange. A second rocker channel member fits within the first rocker channel member and has a vertical base section terminating in upper and lower walls welded to the walls of the first rocker channel member. A vertical plate has a lower portion welded to the downwardly extending plate flange of the first rocker channel member and an upper inwardly extending flange welded to the vehicle floor pan. A sealing strip extends between the rocker structure and the upper outwardly extending lateral flange of the outer sill member.

3,622,196

WINDSHIELD FOR SNOW VEHICLE

Salvatore S. Sarra, Fond Du Lac, Wis., assignor to Brunswick Corporation, Chicago, Ill.

Filed Jan. 14, 1970, Ser. No. 2,715
Int. Cl. B60j 1/02
U.S. Cl. 296—90 13 Claims



A windshield for a snow vehicle which is pivotable from an operative position into a stowed position on the seat. Arms interconnect the pivot points to the corners of the windshield which allow the corners to drop when the windshield is stowed so that the windshield is substantially within the profile of the cowl.

3,622,197

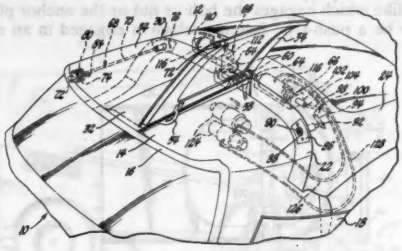
VEHICLE BODY CLOSURE

Robert A. Vogelei, Lathrup Village; Richard W. Kirkman, Harpenden, England, and Alverson B. Williams, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Sept. 25, 1969, Ser. No. 860,907
Int. Cl. B60j 5/04
U.S. Cl. 296—146 8 Claims

A vehicle body closure includes a base having fore and aft pins to mate with holes in a vehicle body to locate the base in an opening in the vehicle body, a releasable top lock to secure the base to the body, and right and left flipper panels pivotally mounted thereto, with each flipper panel movable between a raised position opening half of the opening and a lowered closed position covering half the opening. A door-controlled body-mounted sequentially operating hydraulic linear actuator includes a spring-biased movable cylinder operably connected to a locking mechanism and a movable piston operably removably connected to a base-mounted raising mechanism through the aft pins to sequentially operate in one direction to unlock and then in the opposite direction to raise a flipper panel in response to differential

fluid pressure and to operate in the one direction to lower the flipper panel and then in the opposite direction to lock it

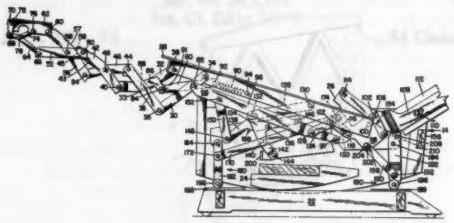


in response to opposite differential fluid pressure. The base and the flipper panels may also be removed giving a completely open body.

3,622,198
ROCKER/RECLINER CHAIR

Frank M. Re, Holyoke, Mass., assignor to Dual Manufacturing and Engineering, Incorporated, Holyoke, Mass.

Continuation-in-part of application Ser. No. 724,143, Apr. 25, 1968, now Patent No. 3,493,264. This application Dec. 11, 1969, Ser. No. 884,187
Int. Cl. A47c *1/035*
U.S. Cl. 297—84 **15 Claims**



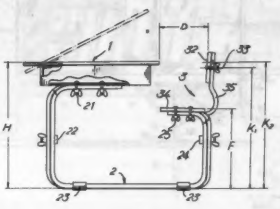
A rocker/recliner chair inclusive of a rocker base, a chassis rockably connected to the base, a body-supporting unit (i.e. a seat and a back) connected to the chassis, a leg rest, and mechanism interconnecting the body-supporting unit and leg rest and chassis for coordinated rocking and reclining motions of the body-supporting unit and extending or retracting of the leg rest and incorporating arresting means engageable with the base in manner such that: (A) the arresting means permit rocking of the chassis and seat and back and leg rest with respect to the base when the chair is in upright position or moving into intermediate reclined position; and (B) the arresting means preclude rocking as the chair assumes intermediate reclined position or is in the intermediate or fully reclined positions or positions therebetween; and (C) the leg rest is variably adjustable in a multiplicity of positions of angularization in the fully reclined position without concomitant movements of the seat and back.

3,622,199
ADJUSTABLE DESK AND CHAIR COMBINATION

Su-Shian Ho, No. 93, Mei Te Street Hsi Lin, Taipei, China /Taiwan

Filed Dec. 12, 1969, Ser. No. 884,465
Int. Cl. A47b *39/00*
U.S. Cl. 297—172 **7 Claims**

An adjustable desk and chair combination which is capable of simultaneously adjusting the elevation of both the desk and the chair and varying the lateral distance between them. The desk includes a frame defined by a base member for receiving fastening members for securing the desk to an adjusting member, and a plurality of side members in a combination with a top member. The adjusting member includes a pair of rigid support members, each having a first horizontal portion, intermediate portions disposed at each end thereof, and second horizontal portions connected to each intermediate portion. Fastening members are secured to the second horizontal members and to the base of the desk set and to the base of the chair respectively. The respective intermediate portions of a pair of rigid support members are pivotally interconnected so that the desk and chair may be adjusted by the scissor action of the adjustable member. The

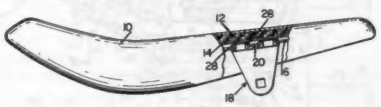


openings in the base of the desk are arranged so that the lateral distance between the desk and the chair is changed at the same time that the elevations of the desk and chair are adjusted. Thus, the desk is nearest the chair in its lowest position and furthest therefrom in its highest position. The top member is hinged to the frame of the desk by hinges so that the desk top member may rest in recesses in the opposed side members of the desk at a predetermined angle with respect to the horizontal.

3,622,200
CYCLE SADDLE

Martin J. Bird, Norwalk, Ohio, assignor to Persons-Majestic Manufacturing Company, Worcester, Mass.

Filed July 16, 1970, Ser. No. 055,507
Int. Cl. B62j *1/00*
U.S. Cl. 297—195 **1 Claim**



A cycle saddle comprising a baseplate and an insert, and a cover, a saddle post bracket attached to said insert by means of a pair of struck up generally cylindrical members like hollow rivets extending through commensurate apertures in the insert, said members being peened over on the interior of the insert in the areas adjacent the apertures.

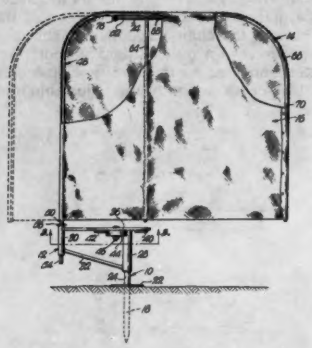
3,622,201
PORTABLE BLIND

Theodore Newman Radig, 310 South Union St., Emporia, Kans.

Filed Mar. 25, 1970, Ser. No. 022,412
Int. Cl. A47c *7/62, 7/10;* A45f *1/00*
U.S. Cl. 297—217 **9 Claims**

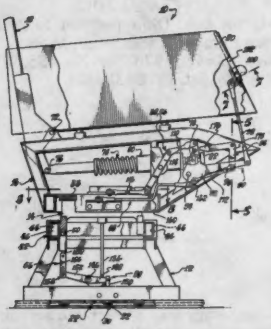
A portable blind for providing concealment and shelter in the field for hunters or observers of wild life is constructed of separable and foldable parts, both to permit quick and convenient assembly under field conditions and to facilitate transportation and storage. The blind includes a user seat, and the seat and cover portions of the blind are adapted for rotation as a unit upon the support structure therefor, to permit quiet and unobtrusive scanning of the surrounding terrain in any direction without the user emerging from the blind, substantially altering his position within the blind, or otherwise creating any undue movement or disturbance that might tend to frighten wild game. The cover portion of the blind, which may be camouflaged, is adapted for immediately and automatically opening from its normal or almost closed con-

dition to an opened condition providing a wide angle field for vision or shooting, whenever a suitable holding means as-



sociated with the elements that support the cover shroud is released by the user.

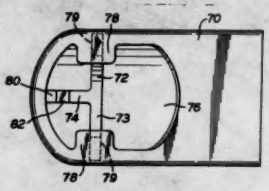
3,622,202
ADJUSTABLE CHAIR AND CONTROL THEREFOR
Vernon C. Brown, 712 Holmby Ave., Los Angeles, Calif.
Filed July 7, 1969, Ser. No. 839,197
Int. Cl. A47c *1/02, 1/06, 3/00*
U.S. Cl. 297—344 **9 Claims**



A single control for an adjustable chair for aircraft, or the like. Different embodiments of the chair are capable of different combinations of fore-and-aft linear movement, lateral linear movement, selective directional linear movement, swiveling movement, tilting movement, and the like. The chair includes different locking means for locking it against the different movements, respectively. A single, manually operable control means mechanically connected to the different locking means used in a particular embodiment unlocks all of them so that the chair can be maneuvered into any desired position by the body of a person seated therein. Upon releasing the single control means, all of the locking means automatically relock.

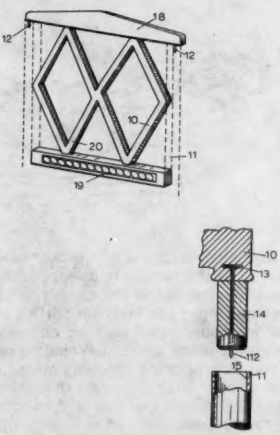
3,622,203
BOOT FOR SEATBELT
Frank W. Steere, Jr., Akron, Ohio, assignor to Steere Enterprises, Inc., Tallmadge, Ohio
Continuation-in-part of application Ser. No. 724,015, Apr. 25, 1968, now abandoned. This application Sept. 2, 1969, Ser. No. 859,242
Int. Cl. A62b *35/60*
U.S. Cl. 297—385 **7 Claims**

Means is incorporated to the underside of the boot for a seatbelt, to engage the means which anchors the belt to the floor or other part of a vehicle so that the boot is not easily dislodged from its position covering said anchoring means. This engaging means may be mechanical or magnetic. It may comprise any type of latch means such as a catch, a clamp or the like which engages the bolt or nut or the anchor plate. It may be a push-type fastener which is engaged in an end of



the bolt. If the anchor bolt is threaded up through the floor or other portion of a vehicle, the nut may be incorporated in the boot and engage the bolt in the usual manner. A magnetic plate or means of other shape which holds the boot to the anchoring means may be employed. A variety of other means may be utilized.

3,622,204
CHAIR AND METHOD OF MAKING SAME
William R. Byrd, 4007 Venice Drive, Erie, Pa., and Richard W. Byrd, 2936 West 15th St., Erie, Pa.
Filed Oct. 31, 1968, Ser. No. 772,095
Int. Cl. A47c *3/00, 7/00*
U.S. Cl. 297—460 **1 Claim**

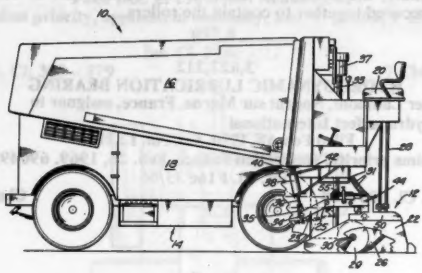


A chair and a method of making a part of the chair from wood and a part of the chair from molded plastic wherein a screw rod or naillike object is molded in place in the chair back thus providing a readily assemblable joint which is assembled in combination with a wood chair.

3,622,205
ICE RINK RESURFACING MACHINE
Frank J. Zamboni, Paramount, Calif., assignor to Frank J. Zamboni & Co., Paramount, Calif.
Filed June 22, 1970, Ser. No. 48,143
Int. Cl. E01h *5/12*
U.S. Cl. 299—24 **8 Claims**

An ice rink resurfacing unit is disposed transversely across the rear of an automotive vehicle and has runners at its ends which run on the ice. The unit is connected to the vehicle by two laterally spaced lift arms, which are pivoted on the vehicle for vertical swinging movement, and connected to the arms is a hydraulic lift cylinder which raises the arms to elevate the unit to transport position. Pivoted on the rear ends of the arms for vertical swinging movement are flexible

joint members, each of which is connected to the resurfacing unit at a point spaced fore-and-aft from the pivot axis. A spring bears against the said member at a point spaced radially from the pivot axis, exerting a torque on the member, causing it to press the unit downwardly with yielding spring pressure.



3,622,206

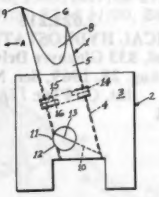
CUTTER BITS AND MEANS FOR MOUNTING THEM

Claude B. Krekeler, Cincinnati, Ohio, assignor to The Cincinnati Mine Machinery Co., Cincinnati, Ohio

Continuation-in-part of application Ser. No. 753,398, Aug. 19, 1968, now abandoned. This application June 30, 1969, Ser. No. 842,791

Int. Cl. E21c *25/46*

U.S. Cl. 299—92 **54 Claims**



Nonrotating cutter bits and mounting means for use on mining, excavating and earth working machines and the like. The cutter bits comprise elongated elements having a shank portion with a cutting tip at at least one end and a gauge-determining abutment surface at at least the other end. The mounting means each comprise a body having a shank receiving perforation, and means in association with the bottom of the perforation having an abutment surface adapted to cooperate with the abutment surface on the cutter bit. Means are provided to frictionally retain the cutter bit shank within the shank receiving perforation, and means are also provided to prevent rotation of the cutter bit within the shank receiving perforation.

3,622,207

HYDRAULIC TRANSLATING AND VALVING UNIT

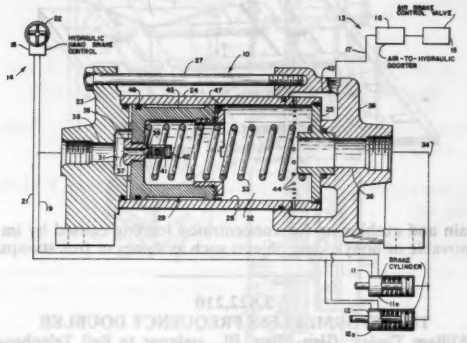
Thomas H. Engle, Cape Vincent, N.Y., assignor to General Signal Corporation

Filed June 25, 1970, Ser. No. 49,851

Int. Cl. B60t *7/10, 17/16*

U.S. Cl. 303—13 **6 Claims**

The disclosure concerns hydraulic translating and valving mechanisms particularly suited for use on railway cars to join a single set of hydraulically operated brake cylinders with both handbrake and service brake circuits. Each mechanism affords slack-compensating action to the handbrake, allows either brake to be cycled regardless of whether the other is applied or released, and prevents unintentional release of a handbrake application as a result of operation of the service brake circuit.



3,622,208

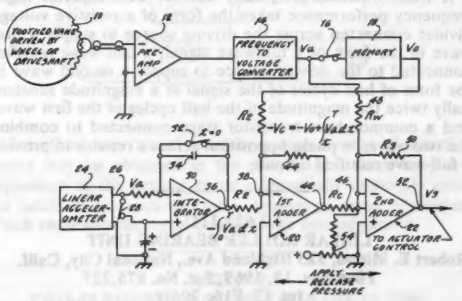
ANALOG CIRCUIT FOR DETECTING DEVIATIONS FROM A PREDETERMINED PERCENTAGE WHEEL SLIP IN AN ANTISKID BRAKE SYSTEM

Allen D. Krugler, Jr., Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jan. 9, 1970, Ser. No. 1,664

Int. Cl. B60t *8/08, 8/10*

U.S. Cl. 303—21 BE **4 Claims**



An electronic circuit for detecting the percentage of wheel slip in the brake system of a wheeled vehicle wherein a synthesized vehicle velocity voltage is combined with a memorized voltage produced by a wheel speed pickup device at the instant the vehicle brakes are applied, the resulting signal being modified by the voltage produced by the speed pickup device at any instant during the braking interval thereby resulting in an output signal which may be used by a wheel brake actuator to correct the wheel braking torque whenever the output signal exceeds a value corresponding to a predetermined wheel slip.

3,622,209

VEHICLE DRIVE TRACK

John F. Leyden, Poughkeepsie, N.Y., assignor to Chemical Rubber Products, Inc., Beacon, N.Y.

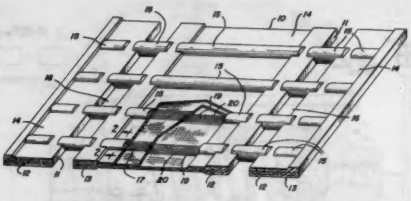
Filed Oct. 27, 1969, Ser. No. 869,679

Int. Cl. B62d *55/24*

U.S. Cl. 305—38 **10 Claims**

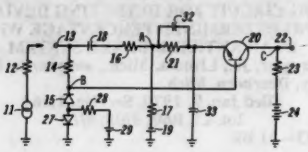
A drive track for vehicles such as snowmobiles comprising a flexible endless belt containing flexible stiffening members composed of wire fabric which maintain the belt in uniform

gripping contact with the ground or snow while simultaneously permitting localized flexibility allowing for uneven ter-



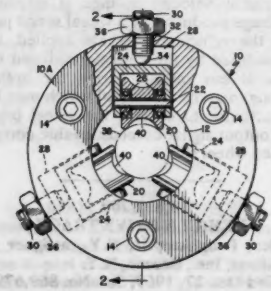
rain and cushioning for concentrated loading caused by immovable or nonyielding objects such as stones or tree stumps.

3,622,210
TRANSFORMERLESS FREQUENCY DOUBLER
William Thelen, Glen Ellyn, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Nov. 16, 1970, Ser. No. 89,597
Int. Cl. H03b *19/14*
U.S. Cl. 307—220 **7 Claims**



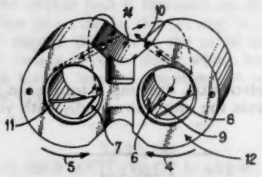
A transformerless frequency doubler with superior high-frequency performance takes the form of a resistive voltage divider connected across the driving source to supply a first wave in the form of a full-wave signal, a half-wave rectifier connected to the driving source to supply a second wave in the form of half cycles of the signal at a magnitude substantially twice the magnitude of the half cycles of the first wave, and a common-base transistor stage connected to combine the two waves in phase opposition across a resistor to provide a full-wave rectified output.

3,622,211
LINEAR ROLLER BEARING UNIT
Robert E. Mitton, 523 Highland Ave., National City, Calif.
Filed Nov. 10, 1969, Ser. No. 875,227
Int. Cl. F16c *29/04*
U.S. Cl. 308—6 **3 Claims**



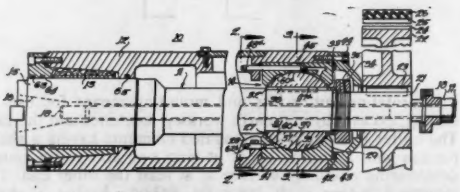
A bearing unit for supporting or riding on a linear member, which is held between multiple rollers mounted in a housing through which the linear member passes. The rollers are rotatable about axes substantially perpendicular to the longitudinal axis of the linear member, and in one form of the unit the rollers are radially adjustable to accommodate linear members of various sizes. For simplicity of manufacture and assembly, the housing is made in two similar halves, which are secured together to contain the rollers.

3,622,212
HYDRODYNAMIC LUBRICATION BEARING
Roger Laumont, Nogent sur Marne, France, assignor to Hydroperfect International
Filed Feb. 18, 1970, Ser. No. 12,215
Claims priority, application France, Feb. 26, 1969, 6904922
Int. Cl. F16c *33/66*
U.S. Cl. 308—78 **7 Claims**



A bearing for a journal lubricated by hydrodynamic lubrication has two helical grooves formed ahead of the load zone of the bearing. One groove has a relatively small pitch angle while the other groove is of greater width and has a much greater pitch angle. Such a bearing arrangement is particularly suitable for supporting stub shafts of gears in high-pressure gear-type pumps and motors.

3,622,213
SPHERICAL HYDROSTATIC BEARING
Rudolph F. Onsrud, 833 Glenayre Drive, Glenview, Ill.
Filed Aug. 28, 1969, Ser. No. 853,810
Int. Cl. F16c *17/16*
U.S. Cl. 308—122 **6 Claims**



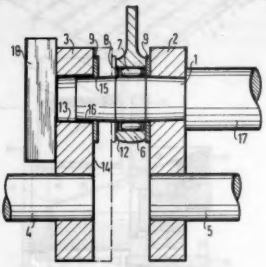
A hydrostatic spherical bearing structure is disclosed wherein a spherical runner is fixedly mounted on a shaft and an enveloping spherical member surrounds the spherical runner with a small clearance and is held in a support or housing. The enveloping spherical member consists of two ring bearing members facing each other. Lubricant under pressure of about 1,500 pounds per square inch is forced to flow into the clearance between the spherical runner and the enveloping surface of the ring bearing members through a series of symmetrically spaced openings in the ring bearing members thereby holding the spherical runner in a central position. Axial or radial deflections caused by corresponding deflections of the shaft of the spherical runner result in increased or balancing pressure being exerted against the spherical runner at the area opposite that where the deflecting force is applied. Under the influence of the balancing pressure, the spherical runner, and thus the shaft, returns to its central position, whether the deflection is radial or axial.

3,622,214

BEARING ARRANGEMENT AND METHOD OF MAKING THE SAME

Hans Durr, Schweinfurt am Main, Germany, assignor to Fichtel & Sachs AG, Schweinfurt am Main, Germany

Filed Dec. 2, 1969, Ser. No. 881,541
Claims priority, application Germany, Dec. 17, 1968, P 18 15 037.3
Int. Cl. F16c 3/12
U.S. Cl. 308—179 7 Claims



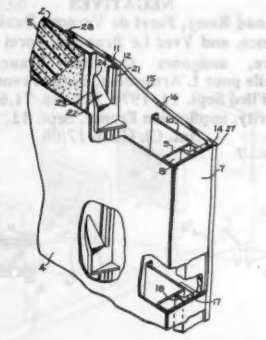
A connecting rod bearing assembly mainly consisting of a journal member having conically tapering ends fixedly received in conforming bores of respective crank webs and a cylindrical middle portion carrying the bearing ring of the connecting rod. Flat abutment rings are held in area contact with the opposite faces of the webs by a press fit on the journal member. The device is assembled by simultaneously pressing the two abutment rings and the webs from the ends of the journal member toward the middle portion.

3,622,215

REFRIGERATOR CABINET CONSTRUCTION

Edward H. Roberts, Jeffersontown, Ky., assignor to General Electric Company

Filed Nov. 10, 1969, Ser. No. 875,266
Int. Cl. A47b 81/00; F25d 11/00; B65d 25/18
U.S. Cl. 312—214 7 Claims



A refrigerator cabinet including a liner having a flange at the front thereof and a shell spaced from the liner and having an inwardly opening channel at the front thereof is provided with a breaker strip comprising an L-shaped anchoring means frictionally received in the channel, and flexible angularly disposed latching elements adapted to ride over and latch the strip onto the liner front edge.

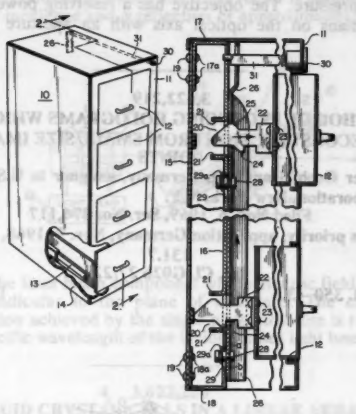
3,622,216

DRAWER INTERLOCKING DEVICE FOR CABINETS

Daniel A. Haunost, Chicago, Ill., assignor to Midwest Folding Products Mfg. Corporation, Chicago, Ill.

Filed May 28, 1970, Ser. No. 41,491
Int. Cl. E05c 15/04
U.S. Cl. 312—219 4 Claims

This invention is directed to the combination of units having superposed slidable drawers, such as cabinets or desks, and having structural means providing a self-locking and unlocking mechanism actuable by the withdrawal of a drawer to lock the remaining drawers against withdrawing movements while the first drawer is withdrawn; to thereby prevent a tipping of the cabinet normally caused by the weight of several drawers being withdrawn at one time.

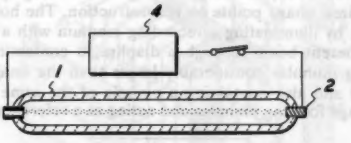


3,622,217

LIGHT PRODUCING SYSTEM

Charles F. Gallo, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed June 30, 1969, Ser. No. 837,881
Int. Cl. H01j 9/22, 9/38
U.S. Cl. 316—8 7 Claims



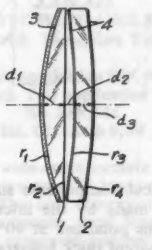
A method is provided whereby a high density of metallic atoms may be obtained in the plasma of a flash lamp by deposition of the desired metal substantially uniformly over the inside of an evacuated tube. Applying a pulse of current which vaporizes the metal produces the desired results.

3,622,218

TWO-ELEMENT OBJECTIVE FOR USE IN THE INFRARED RANGE

Hans Gerhard Kruger, Neckarsteinach, Germany, assignor to Eltro GmbH & Co., Heidelberg, Germany

Filed Dec. 8, 1969, Ser. No. 882,999
Claims priority, application Germany, Dec. 6, 1968, P 18 13 085.3
Int. Cl. G02b 3/00, 1/00, 9/10
U.S. Cl. 350—2 3 Claims



A two-element objective for operation in the infrared range of 8μ and 14μ is constituted by a convex-concave

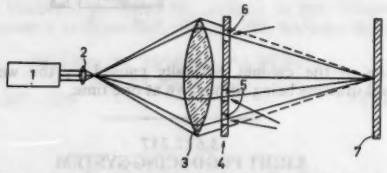
front condensing lens of cesium bromide spaced in front of a rear dispersive lens of polycrystalline zinc sulfide fritted under pressure. The objective has a resolving power of 0.8 milliradians on the optical axis with an aperture ratio of 1:2.5.

3,622,219

METHOD OF PRODUCING HOLOGRAMS WHICH ON RECONSTRUCTION FROM SMALL SIZE IMAGE POINTS

Gunther Groh, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 5, 1969, Ser. No. 874,117
Claims priority, application Germany, Nov. 9, 1968, P 18 08 131.7
Int. Cl. G02b *27/22*
U.S. Cl. 350—3.5 10 Claims



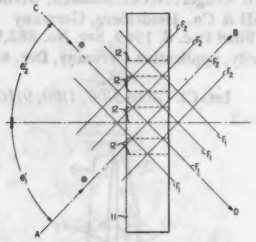
A method of producing a hologram for imaging multiple small sized image points on reconstruction. The hologram is formed by illuminating a recording medium with a converging coherent beam through a diaphragm containing image-forming pinholes considerably larger than the images to be formed and also containing a pinhole of the same shape as the image forming pinholes and acting as a reference source.

3,622,220

HOLOGRAPHIC OPTICAL POLARIZERS AND BEAM SPLITTERS

Herwig W. Kogelnik, Fair Haven, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Oct. 8, 1969, Ser. No. 864,715
Int. Cl. G02b *5/18, 5/30, 27/28*
U.S. Cl. 350—3.5 7 Claims



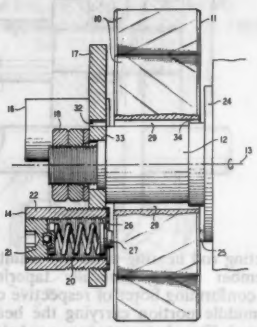
Holographic optical components such as polarizers and beam splitters are made by the interference of a pair of coherent light beams polarized at 90° to their plane of incidence on a transparent thick holographic medium, and intersecting each other at 90° within the medium.

3,622,221

SPRING STRUCTURE FOR PRODUCING SMALL DISPLACEMENTS

Gunter J. W. Kossyk, Piscataway; Leif Rongved, Summit; John W. Stafford, East Orange, and John W. West, Millington, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 4, 1969, Ser. No. 830,393
Int. Cl. G02b *17/00*
U.S. Cl. 350—6 4 Claims



The polygonal mirror of a light beam scanner is aligned on a shaft by three mounting fixtures, each comprising a stiff spring bearing against one side of the mirror and a relatively soft spring bearing against the opposite side. The soft spring is compressed against the mirror by a bolt. The rotational plane of the mirror is adjusted by threading the bolts toward or away from the mirror.

3,622,222

APPARATUS FOR SCANNING PHOTOGRAPHIC NEGATIVES

Claude Edmond Remy, Foret de Vernon; Daniel Francois Kohler, Valence, and Yves Le Branchu, Foret De Vernon, all of France, assignors to Etat Francais Delegation Ministerielle pour L'Armement, Paris, France

Filed Sept. 11, 1970, Ser. No. 71,610
Claims priority, application France, Sept. 11, 1969, 6930868
Int. Cl. G02b *17/06*
U.S. Cl. 350—7 6 Claims

A photographic negative is scanned by coiling the negative on a transparent sleeve and illuminating the negative from within the sleeve by focusing light rays on a rotatable mirror within the sleeve and inclined at an angle of 45° relative to the axis of the sleeve. After the completion of each rotation of the mirror the sleeve is axially displaced for illumination of the next line of the negative.

3,622,223

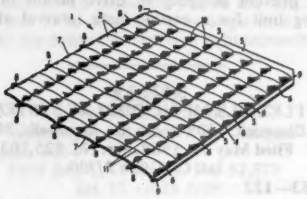
PROJECTION SCREENS

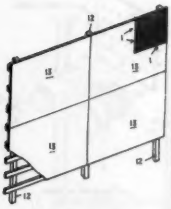
Gordon R. Brakell, Hunters, Hill, New South Wales, Australia, assignor to Brakell Products Pty. Limited, Leichhardt, New South Wales, Australia

Filed Jan. 16, 1970, Ser. No. 003,471
Int. Cl. G03b *21/60*
U.S. Cl. 350—129 3 Claims

A projection screen suitable for indoor or outdoor use, the screen being installed as a permanent fixture and consisting

of individual reflective sheet metal sheets or tiles fixed in overlapping relationship to form the screen to desired width and height dimensions. Each sheet or tile is embossed with





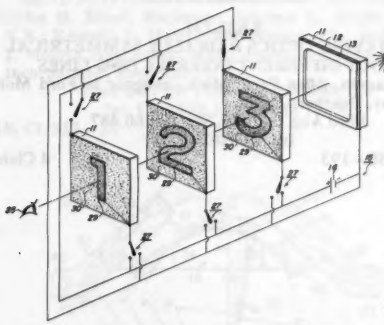
convex reflective surfaces to directionally reflect light from a projection whereby the screen, when formed from a desired number of sheets or tiles, reflects light from a projection within predetermined angles.

3,622,224

LIQUID CRYSTAL ALPHA-NUMERIC ELECTRO-OPTIC IMAGING DEVICE

Joseph J. Wysocki, Webster, and Robert W. Madrid, Macedon, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Aug. 20, 1969, Ser. No. 851,708
Int. Cl. G02f 1/26
U.S. Cl. 350—150 **37 Claims**



An imaging system having a multiplanar series of alphanumeric images in conjunction with an electro-optic imaging cell suitable for displaying one or more of the images.

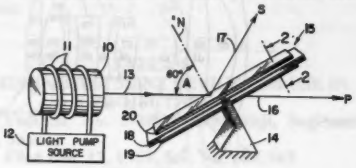
3,622,225

SINGLE PLATE LASER BEAM POLARIZER

William W. Buchman, Los Angeles; Samuel J. Holmes, Santa Monica, and Frank J. Woodberry, Inglewood, all of Calif., assignors to Union Carbide Corporation, New York, N.Y.

Filed Dec. 22, 1969, Ser. No. 887,121
Int. Cl. G02b 27/28
U.S. Cl. 350—152 **7 Claims**

A glass substrate having multilayers of alternately high and low index of refraction materials coated on one surface and positioned to intercept a laser beam at an angle of incidence of 60° provides a transmission of approximately 99 percent of the beam component whose electrical vector is parallel to the plane of incidence and a reflection of approximately 97 per-



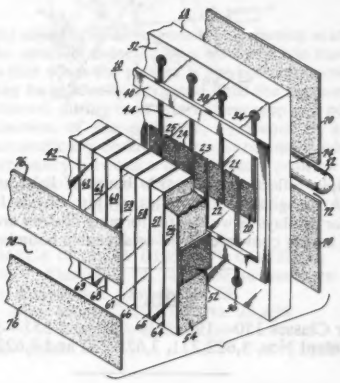
cent of the laser beam component whose electric field vector is perpendicular to the plane of incidence. The efficient polarization achieved by the single plate structure is realized for a specific wavelength of the incident laser light beam.

3,622,226

LIQUID CRYSTAL CELLS IN A LINEAR ARRAY

Dennis Lee Matthies, Princeton, N.J., assignor to RCA Corporation

Filed Nov. 19, 1969, Ser. No. 877,938
Int. Cl. G02f 1/28; H04n 5/84
U.S. Cl. 350—160 **2 Claims**



A linear array of individually addressed liquid crystal cells comprises a chamber formed between two light-transmitting plates. A plurality of light-transmitting electrodes are on the surfaces of the plates within the chamber, and the chamber is filled with liquid crystals. The front plate comprises a plurality of light tunnels, at least one tunnel for each cell as defined by a pair of oppositely disposed electrodes. Each tunnel has sides with light-absorbing material thereon. Light-absorbing masks on the front and backplates have slits that are in alignment with the electrodes.

3,622,227

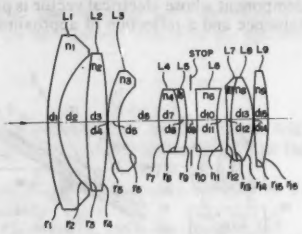
RETROFOCUS-TYPE WIDE-ANGLE CAMERA LENS

Yoshiyuki Shimizu, 1-68, Tamagawa Yohga-machi Setagaya-ku, Tokyo, Japan

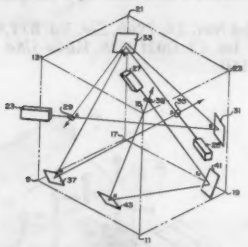
Continuation-in-part of application Ser. No. 611,206, Dec. 27, 1966, now abandoned. This application Dec. 24, 1969, Ser. No. 888,041
Int. Cl. G02b 9/64
U.S. Cl. 350—214 **2 Claims**

A retrofocus-type wide-angle camera lens is provided in which the back focus is especially long compared to the composite focal length. The lens comprises a front lens group having a negative composite focal length and a rear lens group consisting of a cemented positive lens, a negative single lens, a composite positive meniscus lens, and a single

positive lens. The lens thus provided has an aperture ratio of F/2.8 and a viewing angle of over 80° with various aberrations, coma, curvature of the field and distortion highly corrected.



3,622,228
LIGHT REFLECTION APPARATUS
Rockne Krebs, 1960 Biltmore St., Washington, D.C.
Filed Sept. 24, 1969, Ser. No. 860,726
Int. Cl. G02b *5/08*
U.S. Cl. 350—299 **3 Claims**

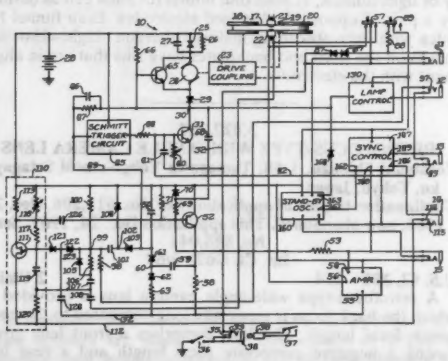


Multiple reflections of a thin beam of light are used to establish imaginary boundaries within physically limited space for displays as well as for forming illusory architectural models having conveniently re-arrangeable boundaries.

ERRATA

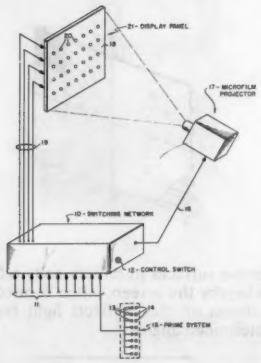
For Classes 350—193, 350—301 and 351—38 see: Patent Nos. 3,622,231, 3,622,232 and 3,622,233

3,622,229
SOUND REPRODUCING UNIT START-STOP CONTROL CIRCUIT
Robert S. John, Jr., Deerfield, Ill., assignor to Bell & Howell Company, Chicago, Ill.
Filed Jan. 26, 1970, Ser. No. 5,824
Int. Cl. G03b *31/00*
U.S. Cl. 352—25 **17 Claims**



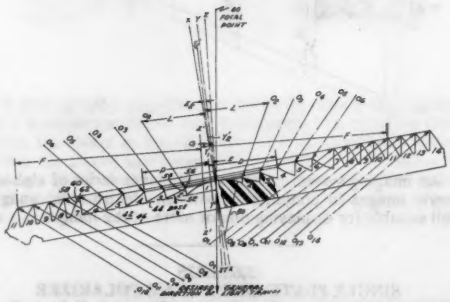
Start-stop control circuit for sound reproducing units arranged to be started by a start signal from a motion picture projector and stopped by stop signals reproduced from a record medium such as a magnetic tape, the stop signals being in the form of trains of pulses. Control means, preferably including a feedback capacitor circuit, are arranged to prevent stopping of drive means of the sound reproducing unit for a certain time interval after starting thereof.

3,622,230
FLEXIBLE MIMIC DISPLAY SYSTEM
Joseph G. Dimmick, 1009 Beech St., Annapolis, Md.
Filed May 19, 1969, Ser. No. 825,703
Int. Cl. G03b *21/00*
U.S. Cl. 353—122 **4 Claims**



A system for simultaneously displaying on one panel different types of dynamic and static data, wherein for each piece of static data concerning a prime system component that is presented, there exists a piece of dynamic data concerning the same prime system component which is presented in such a manner that said dynamic data is displayed in the same specific location on the panel as the associated piece of static data.

3,622,231
LENS HAVING OPTICS RADIALLY SYMMETRICAL ABOUT DIFFERENT INTERSECTING LINES
Nels L. Hansen, Allen Park, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Aug. 3, 1970, Ser. No. 60,487
Int. Cl. G02b *3/08*
U.S. Cl. 350—193 **4 Claims**



A lens is described which, when in use, transmits light rays emanating from a source thereof mounted in a fixed location with respect to the lens. The lens is made of a light transmitting material and comprises a base portion of uniform thickness having integral therewith a plurality of optics. A central optic is constructed about a line perpendicular to the surface of the base. Each of one or more optics which sur-

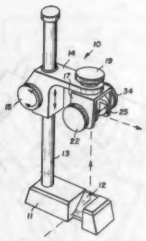
round the central optic is radially symmetrical with respect to a line which intersects the line perpendicular to the base and which is at an acute angle therewith. The function of the optics is to efficiently transmit the light rays in a general direction which is not perpendicular to the lens base. This permits the lens to be mounted at an angle which is not perpendicular to the desired direction of light transmittal.

3,622,232

BEAM DIRECTOR

Charles R. Munnerlyn, Fairport, N.Y., assignor to Tropel, Inc., Fairport, N.Y.

Filed July 6, 1970, Ser. No. 52,578
Int. Cl. G02b 5/08
U.S. Cl. 350—301 11 Claims



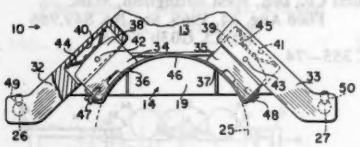
A beam director has a base with a mirror arranged to reflect the beam upward, and a guide above the base carries a vertically adjustable support arm. A rooftop reflector is arranged on the support arm above the base mirror so that the beam reflected from the base mirror is incident on the rooftop reflector. The horizontal position of the rooftop reflector along a line perpendicular to the ridge line of the reflector is adjustable to translate the beam horizontally without changing its direction angle. Preferably, the rooftop reflector is also rotatable about horizontal and vertical axes for changing the beam direction angle.

3,622,233

HEAD SUPPORT FOR DIAGNOSTIC APPARATUS

Charles H. Blood, Rochester; Stephen K. Bright, Perinton, N.Y.; Kenneth D. Maier, Palm Harbor, Fla., and Lawrence J. Meyers, Ann Arbor, Mich., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,738
Int. Cl. A61b 3/00; A61g 15/00
U.S. Cl. 351—38 1 Claim



A headrest to be used in diagnostic apparatus such as, for instance, precision eye examining instruments, said apparatus providing a semiflexible abutment for the forehead to prevent forward or sideward movements of the head.

3,622,234

HOT CORROSION RESISTANT SUPERALLOYS

Alan U. Seybolt, Ballston Spa, and James L. Walker, Schenectady, both of N.Y., assignors to General Electric Company

Filed Dec. 29, 1969, Ser. No. 888,983
Int. Cl. C22c 19/00
U.S. Cl. 75—170 10 Claims

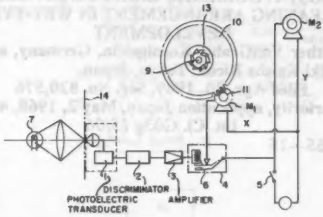
Under certain circumstances of service, nickel-rich and cobalt-rich superalloys are subject to "hot-corrosion" attack. This occurs, for example, when bodies formed from these alloys are operated at elevated temperatures in oxidizing atmospheres in the presence of small amounts of sulfur compounds and salt. It has been found that the presence of a small but effective amount of rare earth oxide in the form of a dispersion of small particles in the alloy effectively reduces this corrosion.

3,622,235

FRAMING ADJUSTMENT DEVICE FOR USE IN PROJECTORS

Masayoshi Yamada, No. 2-36-2, Zempukuji, Suginami-ku, Tokyo-to, Japan

Filed Dec. 17, 1969, Ser. No. 885,763
Int. Cl. G03b 21/50
U.S. Cl. 352—92 3 Claims



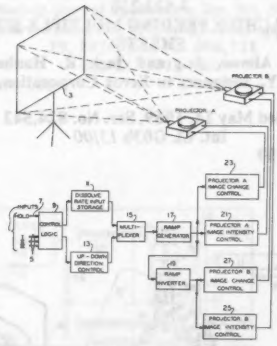
A framing adjustment device wherein a framing mark upon film may be optically detected by a photoelectric transducer element so that when the picture is not correctly positioned, the film may be gradually advanced until the picture is correctly positioned, during each intermittent stop of a pulldown drive mechanism of the projector, by means of a motor which is automatically controlled by discriminator which detects a discrepancy between a proper frame position of projecting film and an aperture of the projector.

3,622,236

IMAGE DISPLAY DISSOLVE CONTROL

John R. Novy, Elmhurst, Ill., assignor to Southern Illinois University Foundation, Carbondale, Ill.

Filed Mar. 4, 1970, Ser. No. 16,438
Int. Cl. G03b 21/20
U.S. Cl. 353—86 19 Claims



Apparatus controls image intensity and image change timing of images produced by a plurality of image display devices. Included is a voltage integrator which produces at its output a first control voltage the magnitude of which varies as a time integral of a voltage applied to its input. Circuitry is provided which applies to the input of the voltage integrator a substantially constant voltage of a controlled polarity and of a preselected magnitude which represents a preselected image intensity rate of change. An inverter interconnected

with the voltage integrator produces a second control voltage whose magnitude varies as an inverse function of the first control voltage. First and second control circuits are interconnected with the voltage integrator and with the inverter, respectively, for causing image changing and varying image intensity of images produced by a respective image display device in accordance with the respective control voltages. Accordingly, image intensity and image change timing of images displayed by the devices are coordinated to cause smoothly dissolving alternating successive display of images.

ERRATUM

For Class 353—122 see:
Patent No. 3,622,230

3,622,237
ELECTROSTATOGRAPHIC LIGHT SENSITIZED DRUM CLEANING ARRANGEMENT IN WET-TYPE DEVELOPMENT

Fried Walther VonGrabe, Koenigstein, Germany, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

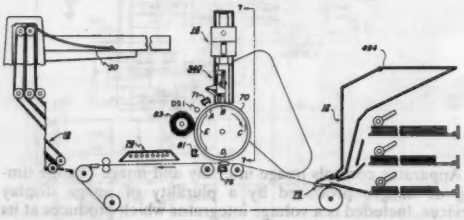
Filed Apr. 30, 1969, Ser. No. 820,576
Claims priority, application Japan, May 2, 1968, 43/29518
Int. Cl. G03g *15/06*
U.S. Cl. 355—15 1 Claim

An electrostatographic light sensitized drum cleaning arrangement in wet-type development process wherein a latent image is removed by pressing a rotary body against the surface of the drum whose one portion is immersed in a developing solution.

3,622,238
COPIER MACHINE FEEDING MULTIPLE SIZE COPY SHEETS

Lawrence C. Alman, Jr., and Jack R. Hauber, both of Webster, N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed May 14, 1969, Ser. No. 824,542
Int. Cl. G03b *15/00*
U.S. Cl. 355—50 6 Claims

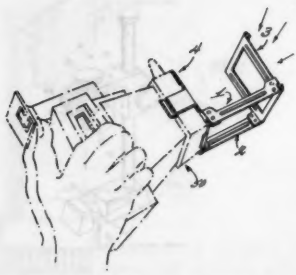


Sheet feed apparatus for an automatic copy machine in which a plurality of tray members support a corresponding stack of sheets. Baffle members arranged at the delivery end of sheet tray members define a common exit path leading toward copy processing stations and feed means associated with each of the stacks engage the topmost sheet of a corresponding stack in response to electrical signals. A control circuit supplies electrical signals to the appropriate sheet feed means to feed automatically a preselected sheet from a one of said stacks toward a common exit path for transport past copy processing stations in accordance with a selected image size to be produced.

3,622,239
PHOTOGRAPHIC COPYING DEVICE

Harmon B. Miller, 1095 West Conway Drive N.W., Atalnta, Ga.

Filed Aug. 26, 1969, Ser. No. 853,009
Int. Cl. G03b *27/62*
U.S. Cl. 355—39 6 Claims

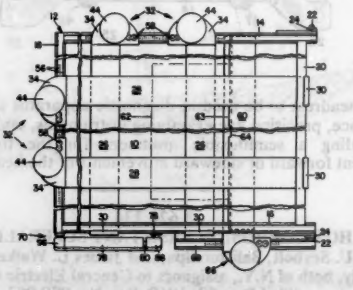


A collapsible copy attachment for use with a camera for supporting a photograph to be duplicated in front of the camera lens, the attachment consists of a camera bracket having a supplemental lens carried thereon so that when the camera bracket is attached to the camera the supplemental lens will be positioned in front of the lens of the camera to reduce the effective focal length of the camera lens; a pair of side rail members are pivotally attached at one end to the lower edge of the camera bracket and extend in spaced apart parallel relation to each other; at the other ends of the side rail members a photograph support frame is pivotally attached adjacent its lower side edges; releasable engaging means are provided both for maintaining the camera bracket and photograph support frame in position for use wherein they extend generally perpendicular to the side rail members and for maintaining them in their folded position wherein they lie between the rail members.

3,622,240
PHOTOGRAPHIC ENLARGING EASEL

Hinsdale Smith, Jr., Suffield, Conn., assignor to Nikor Products Co., Inc., West Springfield, Mass.

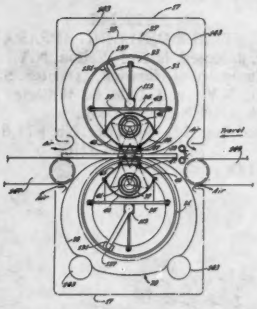
Filed Aug. 14, 1969, Ser. No. 849,986
Int. Cl. G03b *27/58*
U.S. Cl. 355—74 1 Claim



A photographic enlarging easel has a base which has an open frame pivoted thereto, the frame having pairs of intersecting masking bands slidably related thereto. The masking bands are each moved by rotating a pinion which meshes

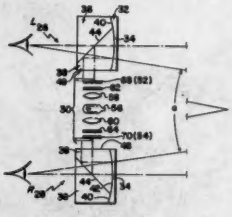
with a rack on the frame. A paper stop is slidably related to the base and is moved by rotating a pinion which meshes with a rack on the base. A spring-loaded telescopic frame elevating assembly pivotally connects between the base and frame for holding the frame in a desired raised position.

3,622,241
ROTARY PHOTOSENSITIVE MATERIAL PRINTER
John L. Dexter, 3715 Friar Lane, Santa Barbara, Calif.
Filed May 21, 1970, Ser. No. 39,257
Int. Cl. G03b *27/10*
U.S. Cl. 355—110 **14 Claims**



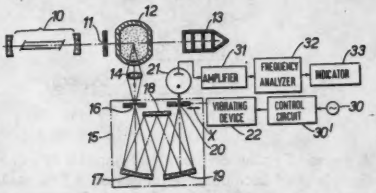
A photosensitive material printer having a pair of water-cooled ultraviolet light sources situated on opposite sides of a workpiece and a pair of negatives which are passed therebetween. The light sources are each positioned within a tubular roller having a rigid translucent inner wall and a pliable translucent pressure outer wall. Air is delivered to the volume between the rigid and the pliable walls so as to maintain firm, fixed contact between the workpiece and the associated negatives. If desired, one or more deflector rollers may be positioned about the periphery of the outer wall to deform it so as to increase the pressure between the rollers and thereby increase the area of contact between the rollers and the workpieces passing therebetween.

3,622,242
STEREOSCOPIC RANGEFINDER WITH MOVABLE RETICLES
Edwin H. Land, and Alfred H. Bellows, both of Cambridge, Mass., assignors to Polaroid Corporation, Cambridge, Mass.
Filed June 4, 1969, Ser. No. 830,266
Int. Cl. G01c *3/14*
U.S. Cl. 356—12 **2 Claims**



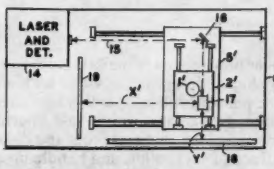
A binocular rangefinder defines a field of view and superimposes thereon a composite stereoscopic virtual image of a pair of dissimilar, stereoscopically related reticles, the image having depthwise extension along a line of sight extending from the observer into the field of view. The apparent position of the image along the line of sight is variable and ranging information is obtainable concerning subjects within the field appearing between far and near limits established by the depthwise extension of the image.

3,622,243
LIGHT SCATTERING SPECTROPHOTOMETER WITH VIBRATING EXIT SLIP
Akiyoshi Wada, Tokyo, Japan, assignor to Shimadzu Seisakusho Ltd., Nakagyo-ku, Kyoto, Japan
Filed Nov. 6, 1969, Ser. No. 874,371
Claims priority, application Japan, Nov. 9, 1968, 43/82078
Int. Cl. G01j *3/44*
U.S. Cl. 356—75 **5 Claims**



A spectrophotometer for measuring Raman and Brillouin spectra of the light scattered from a sample. The spectrophotometer of the invention comprises a monochromatic light source, a sample cell into which the monochromatic light is projected so as to be scattered by the sample, and a monochromator for dispersing the light scattered by the sample. The wavelength of the output light from the monochromator is periodically changed at a predetermined frequency by vibrating the exit slit of the monochromator. The periodically changing output light signal is converted to a corresponding electrical signal, which is Fourier decomposed. The Fourier decomposition makes it possible to distinguish the Raman and Brillouin components of the scattered light from the other components such as the exciting or incident light and stray light.

3,622,244
DUAL AXES INTERFEROMETER
Anwar K. Chitayat, Plainview, N.Y., assignor to OPTOmechanisms, Inc., Plainview, N.Y.
Continuation of application Ser. No. 620,520, Mar. 3, 1967, Continuation-in-part of application Ser. No. 507,919, Mar. 25, 1969, now Patent No. 3,434,787. This application Jan. 29, 1970, Ser. No. 006,711
Int. Cl. G01b *9/02*
U.S. Cl. 356—106 **4 Claims**

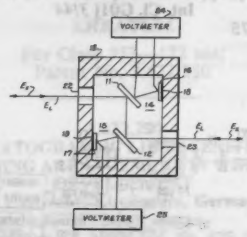


An interferometer device for measuring motion of an instrument along two axes. The instrument such as a microscope or quill is mounted on X- and Y-axes carriages. The heavy laser light source and detectors are mounted on the base of the machine and an interferometer optical block is mounted on one of the carriages. The optical block is quite small and light in weight and does not emit any heat so that it does not cause any mechanical distortion of the carriages.

3,622,245
DOUBLE PLATE CALORIMETER FOR MEASURING THE REFLECTIVITY OF THE PLATES AND THE ENERGY IN A BEAM OF RADIATION

Alvin L. Rasmussen, Boulder, Colo., assignor to The United States of America as represented by the Secretary of Commerce

Filed June 10, 1970, Ser. No. 44,955
Int. Cl. G01j *1/56*; **G01k** *17/00*
U.S. Cl. 356—216 **9 Claims**

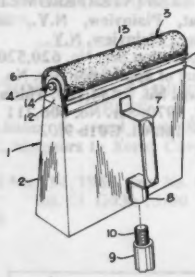


(1) A beam of radiation polarized parallel or perpendicular to the plane of incidence impinges on a first metal plate mirror and is reflected to a second metal plate mirror. A portion of the beam energy is absorbed and converted to heat by the plates. A pair of signals are generated, each having a magnitude dependent upon the level of energy absorbed by the related plate. (2) The beam then impinges on the second plate mirror and is reflected to the first while another pair of signals are generated. The magnitude of each signal is used (3) to calculate the reflectivities of the plates and (4) to calculate the energy in the beam. To evaluate the energy of the quadrature components of a beam of any polarization, the second plate is rotated 90° around the impinging beam as an axis, step 1 is repeated, and the magnitudes of the signals are used to calculate the component energy values.

3,622,246
PAINT ROLLER

Woodrow W. Grooms, 140 Elm Grove, Hazelwood, Mo.

Filed July 25, 1969, Ser. No. 844,856
Int. Cl. B44d *3/28*
U.S. Cl. 401—219 **1 Claim**



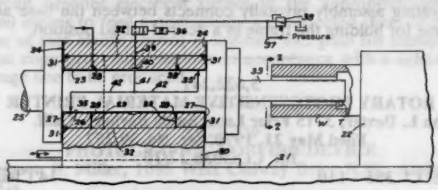
The present invention relates to painting devices comprising a functionally shaped reservoir provided with an aperture therein, a paint dispensing roller operably mounted on said reservoir and disposed near and within said aperture, wiper blades operably mounted on said reservoir and disposed near the peripheral surface of said roller, and handle means.

3,622,247
BORING METHOD

Myron L. Greenberg, 2375 Circle Drive, Union Lake, Mich., and Daniel J. Kolesar, 4455 Sudbury, Warren, Mich.

Filed Apr. 1, 1969, Ser. No. 811,754
Int. Cl. B23b *39/00*, *29/02*
U.S. Cl. 408—147 **6 Claims**

A method and apparatus for finish boring a bore in a workpiece wherein a tool is moved axially and rotated with respect to the bore to take a first cut and is thereafter moved radially outwardly and retracted axially while rotating the

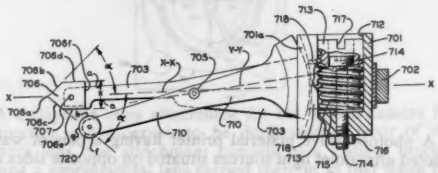


tool relative to the workpiece to provide a finish cut resulting in a finished bore.

3,622,248
ADJUSTABLE DRILLING APPARATUS

David B. Scott, deceased, late of Walton, N.Y.; National Bank and Trust Company of Norwich, executor, 52 South Broad St., Norwich, N.Y., and Dale E. Willhite, executor, 322 Page St., Apt. A-10, Norman, Okla.

Filed Aug. 11, 1969, Ser. No. 871,815
Int. Cl. B23b *51/00*
U.S. Cl. 408—188 **18 Claims**

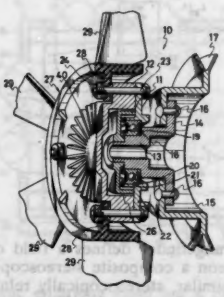


An adjustable drill comprising a rotatable barrel having a first arm rigidly extending therefrom to symmetrically locate a first cutting tool on a drilling axis, a second rigid arm pivotally mounted on the first arm intermediate the barrel and the first cutting tool, with a second cutting tool mounted adjacent one end of the second arm, the other end of the second arm comprising a gear segment which meshes with a worm gear carried inside the barrel, so that rotation of the worm gear varies the angle between the arms and thereby varies the diameter of the hole which is drilled.

3,622,249
FAN ASSEMBLY

Masaharu Hayashi; Shoji Iwata, and Uichiro Kobashi, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Aichi, Pref., Japan

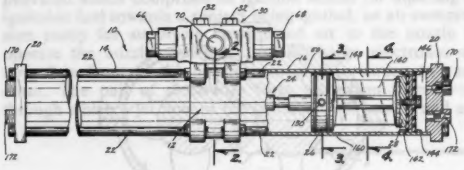
Filed Aug. 13, 1969, Ser. No. 849,658
Claims priority, application Japan, Aug. 18, 1968, 43/70728
Int. Cl. F04d *29/34*
U.S. Cl. 416—204 **7 Claims**



A fan assembly comprises a hub portion and blades made entirely of plastic material, the hub being secured to a driving

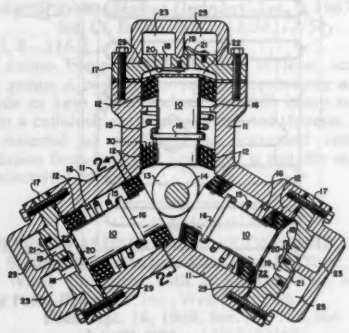
member by means of bolts which pass through bolt holes in the hub. A bush inserted in each bolt hole is provided with an outwardly extending flange on each end thereof, one of which acts as a washer to separate the hub portion of the fan assembly from the driving member.

3,622,250
HIGH-PRESSURE PUMP
George D. Conlee, Humboldt, Iowa, assignor to Slifer Manufacturing Co., Inc., Humboldt, Iowa
Filed July 27, 1970, Ser. No. 58,234
Int. Cl. F04b *17/00*; **F01l** *25/08, 25/02*
U.S. Cl. 417—397 **10 Claims**



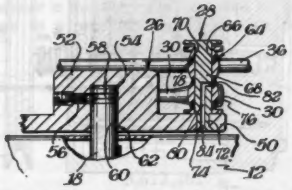
A pump having pistons at opposite ends of the piston rod wherein the piston rod extends through a spool valve body separating the cylinders for the oppositely disposed pistons. A pilot valve body is mounted on the spool valve body and is responsive to reciprocation of the pistons. At the end of a piston stroke the pressure source connected to the pilot valve body is directed into the spool valve body into one of a pair of annular lands on the piston rod and back into an end chamber for the pilot valve element thereby moving the pilot valve element to the opposite end of the pilot valve body in turn reversing the flow of fluid from the pressure source into the piston chambers. At the end of each half cycle this procedure is sequentially followed. The pistons are pivotally connected to the piston rod about axes extending at 90° to each other to permit self-compensation for any misalignment that may exist in the pump structure. The reciprocation of the pilot valve element is dampened by bypassing part of the inlet fluid to the opposite end of the pilot valve element and the pilot valve element is releasably held at one end of the pilot valve body by a magnet.

3,622,251
SEALED PISTON COMPRESSOR OR PUMP
Charles Malcolm Allen, Columbus, Ohio, assignor to The Battelle Development Corporation, Columbus, Ohio
Filed Nov. 12, 1969, Ser. No. 875,802
Int. Cl. F04b *37/00*; **F01b** *19/00*; **F16j** *15/50*
U.S. Cl. 417—471 **8 Claims**



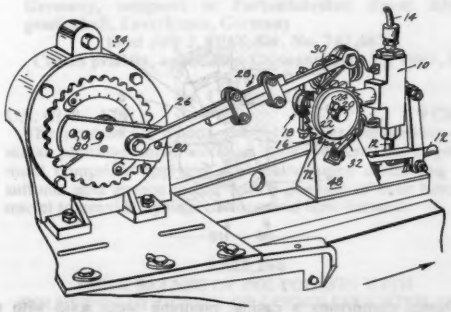
A reciprocating piston compressor or pump in which the pistons are spaced from their housing walls and supported for reciprocation by elastomeric guides or supports that will allow the pistons to reciprocate. A preferred elastomeric support or guide consists of a telescoping metal-elastic belt wound around the piston and bonded to the housing and piston walls. Either the elastomeric guides or separate resilient seals seal the space between the piston walls and the housing so that upon reciprocation fluid may be pumped or compressed from an inlet valve to an outlet valve on one side of the seal and the reciprocating mechanism may be independently lubricated on the other side of the seal.

3,622,252
ROLLER PUMP WITH LUBRICATING CHANNELS FOR ROLLERS
Robert E. Pickup, Norristown, Pa., assignor to Extracorporeal Medical Specialties, Inc.
Filed Apr. 10, 1970, Ser. No. 27,316
Int. Cl. F04b *43/08, 43/12, 45/16*
U.S. Cl. 417—477 **3 Claims**



A roller pump of the type having a flexible tubular pumping chamber continuously and successively depressed unidirectionally by traveling rollers wherein means is provided for directing cleaning and/or lubricating fluids to the bearing surfaces of the rollers to reduce wear and unnecessary "drag" on the tubular pumping chamber and insure that the longitudinal tension in the tubular chamber does not exceed a value which prevents lateral flexure and causes pumping action to continue rather than "by-pass" when a resistance of predetermined magnitude is encountered.

3,622,253
PUMPING DEVICE FOR APPLYING LIQUID MARKINGS
Donelson B. Horton, Madison, and Shelby E. Shelton, Huntsville, both of Ala., assignors to John Blue Company, a Division of Subscription Television, Inc., New York, N.Y.
Filed Nov. 5, 1969, Ser. No. 874,352
Int. Cl. F04b *49/00*
U.S. Cl. 417—223 **15 Claims**

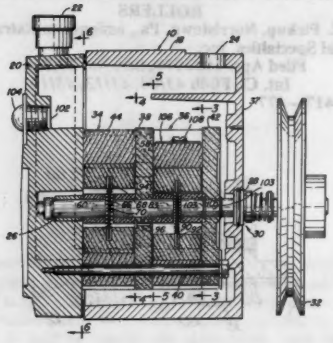


Agricultural spray equipment is provided with a pumping device which intermittently dispenses a liquid for marking the location of spray application. The pumping device includes two cranking mechanisms for reciprocating a piston relative to a chamber through which liquid can be metered and pumped. Provision is made for adjusting the quantity of liquid pumped and the frequency of intermittent dispensing. Also, the pumping device is provided with a safeguard which prevents damage to the device in the event that equipment becomes clogged and a high-fluid pressure is built up in the pumping device.

3,622,254
PUMP

Joseph A. LeBlanc, Jr., Chicago, Ill., assignor to Precision Scientific Co., Chicago, Ill.

Filed June 20, 1969, Ser. No. 835,132
Int. Cl. F04f 11/00, 5/46
U.S. Cl. 418—96 10 Claims

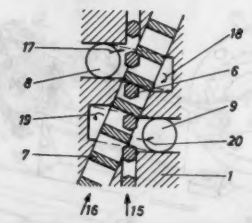


An improved pump construction may be achieved by forming one or more of the major components of the pump from sintered metal. A two-stage rotary vane-type vacuum pump, for example, may advantageously employ sintered metal stators, rotors, vanes, and end plates and sintered metal separator plate. Moreover, an inherently "leaky" valve may be provided for the outlet of the second stage of the pump by placing a resiliently mounted, normally closed sintered metal valve plate over the outlet.

3,622,255
PUMP

Gavril T. Lusztig assignor to Gavril T. Lusztig, 80 Lupton Lane, Apt. 1C, Haledon, N.J.

Filed Aug. 7, 1969, Ser. No. 848,225
Int. Cl. F01c 1/08; F04c 1/04, 17/04
U.S. Cl. 418—195 10 Claims

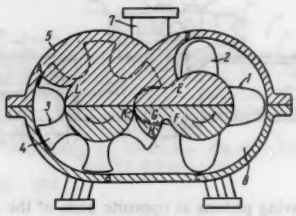


Pump, comprising a casing, pumping teeth solid with a pumping wheel, sealing teeth solid with a sealing wheel, the pumping teeth and the sealing teeth moving in annular spaces which are separated along a portion of their length and do intersect along another portion of their length; part of that contour of the sealing teeth and that surface of the disc or ring of the pumping wheel which effect the sealing between the suction zone and the pressure zone being parts of two substantially spherical surfaces with common center and substantially equal radii; and the arrangement of the pumping wheel and sealing wheel being such that their respective axis do intersect in the center of the spherical surfaces described above.

3,622,256
SCREW-ROTOR MACHINE

Alexandr Ivanovich Borisoglebsky, Drezdenskaya, ulitsa, 42, kv. 74; Boris Lazarevich Grinpress, Tikhoretsky prospekt, 20, kv. 20; Ivan Akimovich Sakun, Krasnoputilovskaya ulitsa, 12, kv. 44; Jury Iosifovich Dimentov, Budapeshtskaya ulitsa, 38, korpus 2 kv. 89; Valentin Nikolaevich Pyankov, Leningradskoi oblasti, ulitsa Leningtadskaya, 61, kv. 51; Moisei Fishelevich Vainshtein, Nevsky prospekt, 27, kv. 15, and Rafkhat Izmailovich Khasanov, prospekt Engelsa, 73, kv. 2, all of Leningrad, U.S.S.R.

Filed Oct. 14, 1969, Ser. No. 866,222
Int. Cl. F01c 1/16; F04c 1/10, 17/12
U.S. Cl. 418—201 3 Claims

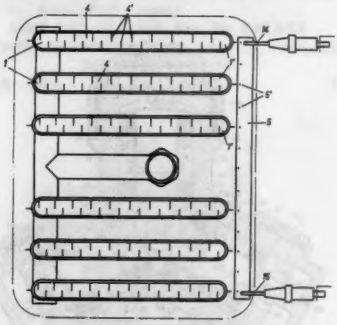


A rotary screw-type machine in which the inlet port is made in the casing at one end face of the rotary screws while the outlet port is made in the casing at the other end face of these rotary screws, in which case the sections of the port contours follow the arc of the addendum and dedendum circles of the teeth of the screws and the profiles of the teeth, while at the zone of contact of the teeth of the screws they follow the line of engagement of these teeth.

3,622,257
IGNITER FACILITY

George Hein, Hpckeswagen, and Hans Meier, Remscheid, both of Germany, assignors to John. Vaillant KG., Remscheid, Germany

Filed Mar. 31, 1970, Ser. No. 24,160
Claims priority, application Germany, Apr. 2, 1969, P 19 16 884.4
Int. Cl. F23q 9/08
U.S. Cl. 431—51 7 Claims



A main gas burner has a plurality of parallel rows of individual burners. An igniter burner tube extends normal to said rows and has an igniter flame port at each of said rows.

An electrical igniter is at one end of the igniter tube to commence the propagation of flame and an electronic flame detector is at the other end of the tube. Controls are provided between the detector and the gas valves for the burners.

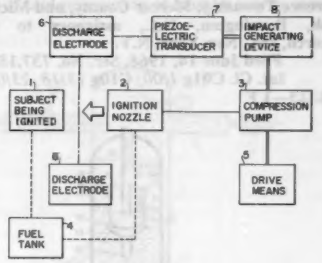
3,622,258

IGNITION SYSTEM FOR PETROLEUM BURNING INSTRUMENT

Kenjiro Goto, Tokyo, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Kawaguchi-shi, Japan

Filed Mar. 9, 1970, Ser. No. 17,377
Claims priority, application Japan, June 14, 1969, 44/56382
Int. Cl. F23q *3/00*
U.S. Cl. 431—255 **20 Claims**

An ignition system for petroleum burning instruments is provided which comprises an ignition nozzle for injecting an ignitable fuel towards a subject being ignited, an air compression pump for supplying compressed air to the nozzle to operate the nozzle, and a pair of discharge electrodes arranged in front of the nozzle in opposite relation to each other. The pair of electrodes form an airgap thereacross through which a jet flow of the ignitable fuel passes, and are connected across a piezoelectric transducer for inducing a spark, by discharge, across the airgap to thereby ignite the ignitable fuel in response to the actuation of the transducer.



The transducer is mechanically impacted by separate means in response to a predetermined operative position of the pump.

CHEMICAL

3,622,259

USE OF UREA AND N-METHYLOL COMPOUNDS IN MINERAL DYEING OF FABRIC

Carl Hamalainen, Metairie; Hubert H. St. Mard, New Orleans; Albert S. Cooper, Jr., Metairie, and Wilson A. Reeves, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture

Filed June 24, 1970, Ser. No. 049,549
Int. Cl. D06p *1/78;* **D06m** *13/38;* **D06p** *5/00*
U.S. Cl. 8—18 **6 Claims**

A practical mineral dyeing process for imparting to cellulosic textiles the qualities of improved dimensional stability, resistance to actinic degradation, and resistance to microbial degradation is produced. The textiles are simultaneously mineral dyed and treated with N-methylol resin and urea mixtures to minimize the tendering of the textiles which is generally associated with the use of metal chlorides upon overdrying.

3,622,260

PROCESS FOR IMPROVING THE HEAT AND ACID RESISTANCE OF CELLULOSE-CONTAINING MATERIALS

Heinrich Seibert, Leverkusen; Peter Hoffmann, Cologne-Stammheim; Ivar Ugi, Leverkusen-Schlebusch; Werner Herzog, Vaihingen, and Karl Kemmner, Unterenzingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Jan. 4, 1968, Ser. No. 695,580
Claims priority, application Germany, Jan. 7, 1967, F 51195
Int. Cl. D06m *13/12, 13/38, 13/54*
U.S. Cl. 8—116.2 **3 Claims**

An amino compound containing at least one primary amino group, a carbonyl compound containing at least one aldehyde or keto group and an isonitrile compound are applied to a cellulosic material and reacted thereon. The cellulosic material so modified has increased resistance to degradation from heat and acids and is suitable as an insulator in electrical devices.

3,622,261

BUFFERED ALDEHYDE FIXATION COMPOSITION

James F. Cotton, Columbus, Ga.; John W. Reed, Shawmut, and Water C. Monk, both of Fairfax, Ala., assignors to West Point-Pepperell, Inc., West Point, Gs

Filed Sept. 16, 1968, Ser. No. 762,366
Int. Cl. D06m *13/34, 13/40*
U.S. Cl. 8—116.4 **26 Claims**

The process of fixing formaldehyde on cellulose or a cellulose ester with the aid of a carbamate and using glycolic acid in the catalyst system is improved by including a buffering agent. Preferably there is also included a hexitol as a scavenger for unreacted formaldehyde.

3,622,262

METHOD FOR WASHING PREFERENTIALLY CELLULOSIC PULP

Nils Gustav Leffler, Sundsvall, Sweden, assignor to Sunds Aktiebolag, Saudsvall, Sweden

Filed Apr. 11, 1968, Ser. No. 720,717
Claims priority, application Sweden, Apr. 13, 1967, 5183/67
Int. Cl. D21c *9/00*
U.S. Cl. 8—156 **8 Claims**

Washing pulp is effected in apparatus wherein the washing liquid is forced through a perforate wall into and through a body of the pulp and into a collecting space for the washing liquid. To prevent clogging of the perforate wall, the influx of treatment liquid into the collecting space is interrupted at suitable intervals, the interruption being produced by pressure variations induced by a vibrator operating in the liquid.

3,622,263

PROCESS FOR THE DYEING OF POLYAMIDE TEXTILES WITH METAL PHTHALOCYANINE DYESTUFFS

Manfred Groll, Cologne-Stammheim; Hans-Samuel Bien, Burscheid, and Ernst-Robert Fritze, Cologne-Flittard, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed July 5, 1968, Ser. No. 742,487
Claims priority, application Germany, July 13, 1967, F 52943
Int. Cl. D06p *3/24*
U.S. Cl. 8—178 **9 Claims**

The process for dyeing synthetic super polyamides with metal phthalocyanine sulfonic acids wherein the improvement comprises applying a phthalocyanine containing 2–3 sulfonic acid groups in the 4- or 5-position of their benzene nuclei to provide dyeings of improved light-fastness.

3,622,264

FIBER BLENDS OF POLYOLEFIN WITH POLYVINYLPYRIDINES OR QUINOLINES WITH AND WITHOUT A POLYETHYLENE OXIDE AND ACID AND DISPERSE DYE VARIEGATED DYEING THEREOF

Charles N. Brown, Columbia, S.C., and Andor Schwarcz, Pompton Lakes, N.J., assignors to Uniroyal, Inc., New York, N.Y.

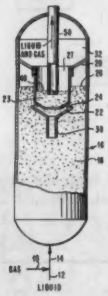
Filed June 13, 1968, Ser. No. 736,555
Int. Cl. D06p *3/82*
U.S. Cl. 8—21 **23 Claims**

This invention relates to a process for dyeing fabrics and textile articles made from polyolefin fibers or two-color or multicolor patterns using a mixture of different classes of dyes in a single dyebath, which may optionally contain an anionic and nonionic surfactant.

3,622,265
PHASE SEPARATION OF A GAS-LIQUID-SOLID MIXTURE

Carl L. Weber, Washington Crossing, Pa.; Ronald H. Wolk, Lawrence Township, Mercer County, and Michael C. Chervenak, Pennington, N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed June 14, 1968, Ser. No. 737,156
Int. Cl. C01g *1/00*; C10g *13/18*, *23/06*
U.S. Cl. 23—1 F 2 Claims



A method for improved separation of liquids, gases and particulate solid materials in a liquid gas contacting process wherein a liquid feed and gas usually hydrogen are passed upwardly through a bed composed of a particulate contact agent, the velocity of the gas and the liquid being such that the particles are put in a state of random motion and the volume of the bed is expanded over its static volume and wherein an area of high liquid gas and liquid turbulence and mixing is created and wherein liquid effluent and gaseous effluents are removed from the contact zone. The method consists of effecting essentially complete disengagement of the gas from the mixture of particulate solids and liquid. The gas-free liquid-solid mixture is then introduced to a zone of relatively low turbulence and liquid is then removed from this zone at a rate whose lineal velocity is less than the settling velocity of the solid, thereby allowing substantial settling of the solid and resulting in the removal of a clarified liquid. The disengaged gaseous effluent may then be removed separately or recombined and removed with the liquid effluent. Apparatus for efficiently carrying out this process are described.

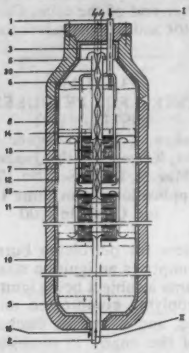
3,622,266
METHOD AND APPARATUS FOR REACTION HEAT RECOVERY IN CATALYTIC HIGH-PRESSURE SYNTHESIS, PARTICULARLY IN AMMONIA AND METHANOL SYNTHESIS

Helmut Laukel, Dortmund-Berghofen, Germany, assignor to Friedrich Uhde GmbH, Dortmund, Germany

Filed Apr. 9, 1969, Ser. No. 814,747
Claims priority, application Germany, Apr. 13, 1968, P 17 67 230.9
Int. Cl. C01c *1/04*; B01j *9/04*; C07c *29/16*
U.S. Cl. 23—1 E 6 Claims

Method and apparatus for the recovery of reaction heat in a catalytic high-pressure synthesis process- particularly ammonia and methanol synthesis- the total flow or reactant gas being heat-exchanged against the reaction gas from the bottom catalyst layer. This flow of preheated reactant gas is subsequently divided into two streams for further heating and for reducing the temperature of the reaction gas from the top and central catalyst layers. These streams pass through the heat exchanger arranged downstream of the top and central catalyst layer, respectively.

The apparatus comprises a reactor which contains three catalyst layers arranged one above the other and two gas to gas heat exchangers arranged in the center of the central catalyst layer. These heat exchangers are connected between the catalyst layers with respect to the tube-side flow of the reaction gas. The entire flow of reaction gas passes alternately through successive catalyst layers and heat exchangers. The shell-side passes of the gas to gas heat exchangers are connected in parallel so that the entire flow of reactant gas to

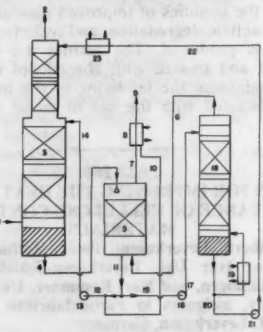


be heated further is distributed to these passes. The two gas streams are recombined after leaving the heat exchangers.

3,622,267
PROCESS FOR REMOVING CARBON DIOXIDE FROM GAS MIXTURES

Ernst Bartholome, Heidelberg; Hans Wilhelm Schmidt, Mannheim, and Juergen Friebe, Wachenheim, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed Jan. 19, 1970, Ser. No. 003,779
Claims priority, application Germany, Jan. 22, 1969, P 19 03 065.0
Int. Cl. B01d *53/00*
U.S. Cl. 23—2 R 3 Claims



Separation of carbon dioxide and hydrogen sulfide from gases by scrubbing the gases with a 2.5 to 4.5 molar aqueous solution of methydiethanolamine at a temperature of from 70° to 110° C. From 0.1 to 0.4 mole of monomethylmonoethanolamine is also added to the solution for the removal of any carbonyl sulfide.

3,622,268
METHOD FOR RECOVERY OF METALLIC CATIONS

Takeo Wada, and Kazuo Okada, both of Suita, Japan, assignors to Takeda Chemical Industries Ltd., Osaka, Japan

Filed Mar. 19, 1969, Ser. No. 808,493
Claims priority, application Japan, Mar. 20, 1968, 43/18136
Int. Cl. C01b *59/00*
U.S. Cl. 23—22 7 Claims

A method for recovery of metallic cations whereby a zeolitic material represented by the formula

$$M_xH_{3-x}[(Al_yFe_{1-y})_4(P_lAs_{1-l})_3O_{16}]\cdot zH_2O$$

wherein M represents a univalent or a ½-bivalent cation and x, y, z and l are numerical values of $0 \leqq x \leqq 5$, $0 \leqq y \leqq 1$, $z \leqq 9$ and $0 \leqq l \leqq 1$, respectively; is contacted with a solution containing metallic cations, whereby the cations represented by M are exchanged by the desired metallic cation, and the zeolitic

material is washed with an acid to recover the metallic cations.

3,622,269

PROCESS FOR RECOVERING PURE AQUEOUS SOLUTION OF FERRIC CHLORIDE AND AQUEOUS SOLUTION OF METAL CHLORIDES FREE OF FERRIC CHLORIDE

Toshio Yamamura; Yuichi Omote; Shiro Sato, and Tomochika Hiyama, all of Shibukawa-shi, Gunma, Japan, assignors to Kanto Denka Kogyo Co., Ltd., Chiyoda-ku, Tokyo, Japan

Filed Sept. 15, 1969, Ser. No. 858,173
Claims priority, application Japan, Sept. 19, 1968, 43/67838
Int. Cl. C01g *49/10*
U.S. Cl. 23—87 R 5 Claims

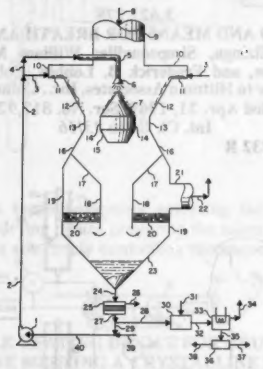
An aqueous solution of metal chlorides is subjected to liquid-liquid contact with an alkyl, aryl or aralkyl ketone or ether having four to 10 carbon atoms so that the ferric chloride is transferred to the organic ketone or ether extractant phase and the remaining metal chlorides remain in the aqueous phase. The extractant phase is contacted with water to transfer the ferric chloride into a second aqueous phase.

3,622,270

REMOVAL OF SULFUR DIOXIDE FROM GAS STREAMS

Indravadan S. Shah, Forest Hills, N.Y., assignor to Chemical Construction Corporation, New York, N.Y.

Filed Feb. 27, 1970, Ser. No. 014,948
Int. Cl. C01f *5/42*; C01b *17/56*
U.S. Cl. 23—129 5 Claims



Sulfur dioxide is scrubbed from a gas stream, such as a waste or flue gas, using an aqueous scrubbing solution containing dissolved magnesium sulfite and magnesium bisulfite, which is divided into two portions. A first portion is sprayed centrally downwards into a vertically oriented venturi passage through which the gas stream is passed in a downwards direction, and a second portion of the scrubbing solution flows downwards on the inner surface of the converging section of the venturi. Improved scrubbing efficiency is attained with low liquid to gas flow rates.

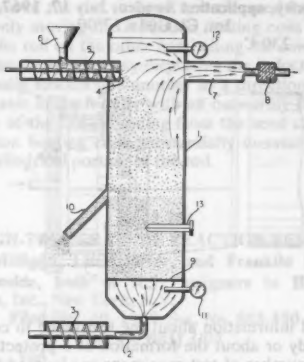
3,622,271

PROCESS FOR PRODUCING ALUMINA OF LOW RESIDUAL NITRATE CONTENT FROM BASIC ALUMINUM NITRATES

Donald H. Kelly, Gladstone, and Charles P. Bruen, Basking Ridge, both of N.J., assignors to Reynolds Metals Company

Filed Nov. 21, 1968, Ser. No. 777,777
Int. Cl. C01f *7/02*, *7/66*
U.S. Cl. 23—142 1 Claim

Process for preparing a precalcined alumina of low residual nitrate content, suitable for calcining to alpha alumina, which comprises maintaining a basic aluminum nitrate prepared by heating molten aluminum nitrate nonahydrate to a temperature above its decomposition temperature but not above 230° C. under superatmospheric pressure, while removing gaseous nitric acid decomposition products, until between 45 percent and about 60 percent of the HNO_3 of the aluminum nitrate nonahydrate has been removed, followed by reduction of said pressure to at least as low as atmospheric pressure, said basic aluminum nitrate being of controlled free alumina content and in particulate form in a fluidized bed at temperatures of at least about 470° C. for a period sufficient to reduce the residual N_2O_5 content to a value of not more than about 0.02 mole or N_2O_5 per mole of alumina, Al_2O_3.

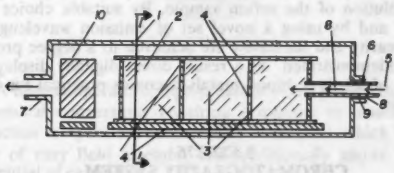


3,622,272

METHOD OF GROWING SILICON CARBIDE WHISKERS

James J. Shyne, Caldwell, and John V. Milewski, Saddle Brook, both of N.J., assignors to General Technologies Corporation, Reston, Va.

Filed Apr. 1, 1968, Ser. No. 717,530
Int. Cl. C01b *31/36*; B01j *17/32*, *1/00*
U.S. Cl. 23—208 9 Claims



A method of growing silicon carbide whiskers of high quality and in high yield involves reacting a gas mixture of about 80–95 percent by volume hydrogen, 0.4–4 percent by volume hydrocarbon gas, 0.3–15 percent by volume carbon monoxide and 3–10 percent by volume inert carrier gas in a vapor atmosphere of silicon monoxide at an elevated temperature. The product is principally long-length, hairlike silicon carbide whiskers of high quality, and in high yield.

3,622,273

METHOD FOR THE REMOVAL OF HYDROGEN SULFIDE FROM GASEOUS STREAMS

Melvin L. Roberts, Woodridge; Carl E. Johnson, Glen Ellyn, and Richard C. Miller, La Grange Park, all of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Feb. 6, 1970, Ser. No. 009,430
Int. Cl. C01b *17/04*
U.S. Cl. 23—225 R 13 Claims

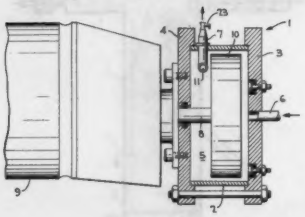
A method for removing hydrogen sulfide from gaseous streams by contacting the gaseous stream with an absorbing solution of from 0.005 to 20 percent of a ferric ion complex, from 25.0 to 99.945 percent water, from 0.05 to 10.0 percent of a buffering agent, and from 0 to 74.945 percent of a water-soluble, organic solvent selected from the group consisting of dimethyl formamide and dimethyl sulfoxide.

3,622,274

METHOD FOR COMPARATIVE STUDIES OF A METAL S CORROSION RESISTANCE AND APPARATUS AS AN AID TO THESE INVESTIGATIONS

George Richardson, and Bengt Algers, both of Abygatan 9, Molndal, Sweden

Filed July 8, 1968, Ser. No. 743,102
Claims priority, application Sweden, July 17, 1967, 10587/67
Int. Cl. G01n 17/00
U.S. Cl. 23—230 C 7 Claims



For rapid information about the resistance to corrosion of a metal body or about the formation of a protective coating thereon, a number of test specimens are located in a stream of corrosive agent in such a manner that the flow velocity of the agent is different past each specimen. The specimens are in turn connected to an electric circuit in such a manner that they may be individually disconnected therefrom and connected to a measuring instrument which records the galvanic current between the specimen in question and the remaining specimens, the magnitude of the current being a function of the corrosive action at that particular specimen.

3,622,275

FLAME PHOTOMETRIC METHOD FOR ANALYZING BODY FLUIDS

John J. J. Staunton, 310 Wesley Ave., Oak Park, Ill., and Reid H. Curtis, 20 East Harrison St., Lombard, Ill.

Filed Mar. 14, 1969, Ser. No. 807,413
Int. Cl. G01n 33/16, 21/58
U.S. Cl. 23—230 PC 3 Claims

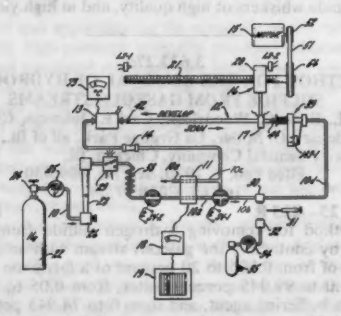
Method for determining sodium, potassium and calcium simultaneously in blood serum by flame photometry using a single dilution of the serum sample. By suitable choice of dilution and by using a novel set of emission wavelengths both linearity and sensitivity are achieved to a degree previously undemonstrated. As a result, direct digitally displayed readout of all three blood metals becomes practical for the first time.

3,622,276

CHROMATOGRAPHY SYSTEM

Eero O. A. Haahti, Helsinki, and Ilmari P. Jaakonmaki, Turku, both of Finland, assignors to Packard Instrument Company, Inc., Downers Grove, Ill.

Filed May 6, 1969, Ser. No. 822,233
Claims priority, application Finland, Oct. 15, 1968, 2911/68
Int. Cl. G01n 31/08, 31/12
U.S. Cl. 23—230 R 35 Claims



Apparatus and method for particular use in thin layer chromatography (TLC). The chromatogram is developed on the inside of a tubular conduit internally coated with the combination of an adsorbent and a reactant or a catalyst capable of decomposing adsorbed compounds to gaseous products at elevated temperature. For the analysis, carrier gas is passed through the conduit and heat is applied to a selected zone. The zone is then moved along the conduit to decompose chromatographically resolved compounds, thereby changing the composition of the carrier gas stream. This composition change is determined as a measure of the composition of the chromatographically resolved mixture.

3,622,277

METHOD FOR DETERMINING SULFATE CONCENTRATION

Charles A. Noll, Philadelphia, Pa., and Louis J. Stefanelli, Pennsauken, N.J., assignors to Betz Laboratories, Inc., Trevose, Pa.

Filed Dec. 29, 1969, Ser. No. 888,970
Int. Cl. G01n 31/02, 31/22
U.S. Cl. 23—230 R 8 Claims

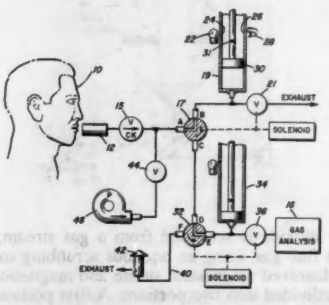
Method for determining the sulfate ion concentration of an aqueous solution. The mechanism of the method resides in the use of a chelate of a metal which under acidic conditions dissociates to release metal ions which will react with the sulfate ion present to produce a colloidal metal sulfate precipitate. In order to ensure that the free chelant does not precipitate or react to form a precipitate, there is also added to the solution a quantity of a metal compound, the metal of which will replace the original metal of the chelate to form a water soluble second chelate. The turbidity or color density of the aqueous solution is measured and compared to the color density values obtained for solutions containing known quantities of sulfate precipitate of the same metal

3,622,278

METHOD AND MEANS FOR BREATH ANALYSIS

William E. Elzinga, Simpsonville; William M. Kaufman, Chevy Chase, and Frederick B. Lobbin, Columbia, all of Md. assignor to Hittman Associates, Inc., Columbia, Md.

Filed Apr. 21, 1969, Ser. No. 817,928
Int. Cl. G01n 33/16
U.S. Cl. 23—232 R 14 Claims



A method and means for measuring and analyzing the composition of alveolar air for determining the volatile constituents in blood. The method and apparatus of the present invention automatically eliminate the inclusion of air from the "dead air" spaces of the respiratory tract and thereby avoid dilution of the alveolar air, such dilution leading to inaccurate measurement of the relative concentration of the chemical constituent being examined.

3,622,279

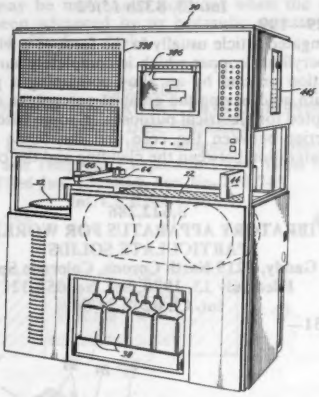
AUTOMATIC CHEMICAL TESTING APPARATUS

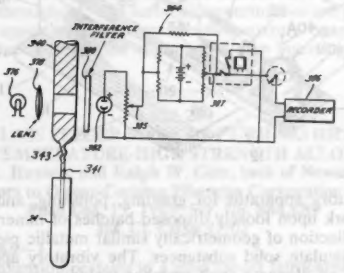
John J. Moran, Houston, Tex., assignor to Hycel Inc., Houston, Tex.

Filed June 14, 1968, Ser. No. 737,065
Int. Cl. G01n 21/00, 1/14
U.S. Cl. 23—253 R 6 Claims

A discretionary automated chemical testing apparatus for conducting multiple chemical tests on a plurality of samples. A loop conveyor carrying rows of tubes along various stations at which steps in chemical testing is performed with a

sample dispensing assembly picking up and dispensing a test sample in the tubes, reagent dispensing assembly metering desired amounts of reagents at the proper station, heating means at the stations as required for the chemical test being





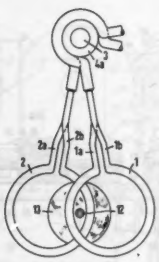
performed, a testing assembly analyzing the results, tube cleaning and drying means preparing the tubes for reuse, and control means selectively controlling the sequential and multiple analysis.

3,622,280

ADJUSTABLE HEATING DEVICE FOR CRUCIBLE-FREE ZONE MELTING A CRYSTALLINE ROD

Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

Filed Apr. 26, 1968, Ser. No. 724,528
Claims priority, application Germany, Apr. 29, 1967, S 109660
Int. Cl. B01j *17/10*; H05b *5/18*
U.S. Cl. 23—273 SP **4 Claims**



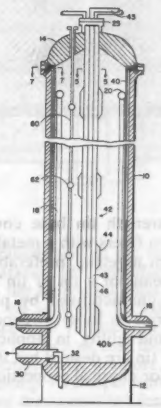
Device for crucible-free zone melting a crystalline rod, particularly a semiconductor rod, includes two induction heating coils annularly surrounding the crystalline rod, and driving means for adjusting the position of the induction heating coils relative to one another in a direction transverse to the rod axis. Method of using the device includes relatively moving the induction heating coils away from one another transversely to the rod axis at the junction of a seed crystal with one end of the rod so as to fuse the seed crystal to the rod, relatively moving the induction heating coils on the one hand and the rod on the other hand along the axis of the rod and simultaneously relatively displacing the induction heating coils gradually toward one another in a direction transverse to the rod axis in conformity with an outwardly flaring conical portion of the rod extending from the seed crystal, until the induction heating coils substantially coaxially surround the main cylindrical portion of the rod.

3,622,281

HIGH-TEMPERATURE REACTION VESSEL

John D. Milligan, Little Silver, and Franklin D. Hoffert, Mountainside, both of N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Oct. 10, 1969, Ser. No. 865,350
Int. Cl. B01j *3/02*
U.S. Cl. 23—290 **7 Claims**



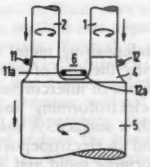
A high-temperature, high-pressure vapor phase reactor for chemical conversions requiring a quench to maintain the reaction temperature substantially isothermal, which is capable of easy field assembly and additionally allows for differential of expansion.

3,622,282

METHOD FOR PRODUCING A MONOCRYSTALLINE ROD BY CRUCIBLE-FREE FLOATING ZONE MELTING

Wolfgang Keller, Pretzfeld, Germany, assignor to Siemens Aktiengesellschaft, Berlin, Germany

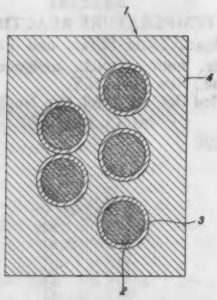
Filed Dec. 19, 1967, Ser. No. 691,778
Claims priority, application Germany, Dec. 30, 1966, S 107671
Int. Cl. B01j *17/18, 17/10*
U.S. Cl. 23—301 SP **7 Claims**



Method for producing a monocrystalline rod, such as a semiconductor rod, by crucible-free zone melting includes

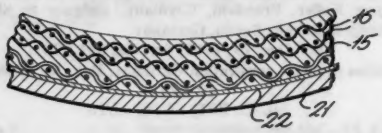
heating to melting temperature and end of at least two supply rod portions of given material supplied at spaced locations to a melting zone of the material, and additionally heating the melting zone with at least one additional heat source disposed within the space between the supply rod portions being supplied to the melting zone.

3,622,283
TIN-CARBON FIBER COMPOSITES
Raymond V. Sara, North Olmsted, Ohio, assignor to Union Carbide Corporation
Filed May 17, 1967, Ser. No. 639,153
Int. Cl. B32b *15/02, 15/04, 15/14*
U.S. Cl. 29—183.5 **16 Claims**



Low-density, high-strength tin base composites are provided by coating carbon fibers with a metallic coupling agent and then bonding them together, preferably in a parallel or aligned manner, by means of a tin or tin base alloy matrix. Such composites are characterized by physical properties which are much superior to those evidenced by the matrix material alone and find utility in applications where the chemical properties of tin are desired but its use is prohibited or limited due to its poor physical properties.

3,622,284
ELECTRODEPOSITION OF METAL OVER LARGE NONCONDUCTING SURFACES
Siegfried G. Bart, Montclair, N.J., assignor to Bart Manufacturing Corporation, Newark, N.J.
Filed Feb. 29, 1968, Ser. No. 709,354
Int. Cl. B23p *3/20;* **C23b** *7/02, 5/60*
U.S. Cl. 29—191.4 **15 Claims**

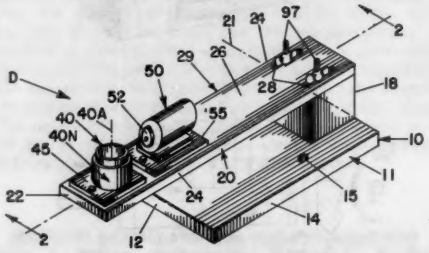


A method of electrodepositing metal on a large nonconducting surface involving the use of nonconductive surface having an exposed network of interconnecting electrical conductors. Methods of electroforming and electroplating involving the use of such a surface. A method of making an electroforming mold and an electrodeposition form with such a surface. An electroforming mold and an electrodeposition form with such a surface. An electroplated article having a base containing such a surface. A method of making a foraminous metal article utilizing such a surface.

3,622,285
COMPOSITE WIRE OR THE LIKE
Charles E. Hayes, North Attleboro, Mass., assignor to Leach & Garner Company
Filed Dec. 8, 1969, Ser. No. 883,262
Int. Cl. B32b *15/02*
U.S. Cl. 29—199 **5 Claims**

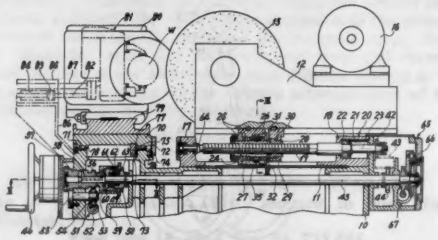
An elongated article usually in the form of a wire having a core of beryllium copper which is completely surrounded in cross section or clad by an alloy containing a plurality of metals with gold having the greatest percentage and particularly adapted for electrical purposes. In some cases there may be a barrier between the core and the outer cladding to prevent migration between the cladding and the core.

3,622,286
VIBRATORY APPARATUS FOR WORKING PARTICULATE SOLIDS
Lloyd E. Gaddy, 1219 North Corona, Colorado Springs, Colo.
Filed July 13, 1970, Ser. No. 054,321
Int. Cl. B24b *31/06*
U.S. Cl. 51—7 **11 Claims**



A vibratory apparatus for grinding, polishing, and doing similar work upon loosely disposed batches of mineral pebbles, a collection of geometrically similar metallic pieces, or other particulate solid substances. The vibratory apparatus comprises an elongate shelf member including a cantilever portion extending longitudinally from a stationary lateral node, a receptacle adapted to receive a batch of particulate solids and associated with the cantilever portion, means for rapidly twistably vibrating the cantilever as in alternating directions about the cantilever-axis at progressively decreasing amplitudes toward the node, and means for adjusting the amplitudes and frequencies of said twistable vibrations.

3,622,287
NUMERICALLY CONTROLLED GRINDING MACHINE WITH A SIZING DEVICE
Mikishi Kurimoto, Nagoya; Hiroyasu Takegawa, Kriya, and Sadamu Kato, Aichi-ken, all of Japan, assignors to Toyoda Koki Kabrishiki Kaisha, Aichi-ken, Japan
Filed June 19, 1970, Ser. No. 047,665
Claims priority, application Japan, June 26, 1969, 44/50789
Int. Cl. B24b *49/04*
U.S. Cl. 51—165 R **6 Claims**



A grinding machine is provided with a sizing device for providing a sizing signal which controls a hydraulic actuator to feed a wheel slide. A sizing point of the sizing signal is shifted to be preset in accordance with numerical informa-

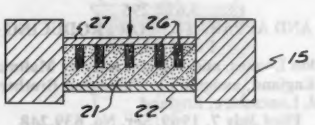
tion of a desired finish dimension of a workpiece before grinding. In accordance with the numerical information, simultaneously it is compensated in an original position of the wheel slide relative to the workpiece by a servomotor so that the vacant space between a grinding wheel and the workpiece may be maintained constant when the grinding wheel has been advanced by its hydraulic actuator to the rapid feed end of its feed stroke.

3,622,288

METHOD FOR THE PRODUCTION OF BONDED ABRASIVE DISC WHEELS

Charles V. Rue, Tiffin, Ohio, assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jan. 13, 1969, Ser. No. 790,745
Int. Cl. B24b *1/00*
U.S. Cl. 51—295 4 Claims



A method is provided for producing bonded abrasive disc wheels with surface discontinuities therein having a uniform density throughout. The surface discontinuities are produced on the upper surface of an abrasive mixture by projecting means from beneath the mixture and then inverting the mixture.

3,622,289

GLASS FEEDER MADE OF PT-RH-MO HIGH TEMPERATURE-HIGH STRENGTH ALLOY

James H. Hansen, and Ralph W. Getz, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed Dec. 12, 1969, Ser. No. 884,689
Int. Cl. C03b *37/02*
U.S. Cl. 65—1 4 Claims

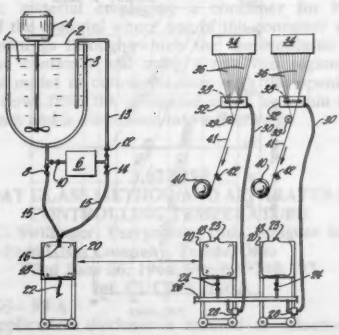
This invention pertains to a glass feeder fabricated from an alloy containing 14–79 percent platinum, 20–85 percent rhodium and 0.01–10 percent molybdenum in which said molybdenum is present in an amount sufficient to increase the ductility of the alloy. This invention also pertains to a composite feeder comprising different platinum-rhodium and molybdenum alloys wherein the molybdenum content of these alloys are in an amount sufficient to maintain the resistivities of the alloys at the same magnitude when the feeder is in use at high temperatures.

3,622,290

METHOD OF MAKING, SUPPLYING AND APPLYING CHEMICAL TREATMENT TO GLASS FIBERS

Jerome P. Klink, and Charles R. Morrison, both of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed Nov. 4, 1968, Ser. No. 773,027
Int. Cl. C03c *25/02*
U.S. Cl. 65—3 3 Claims



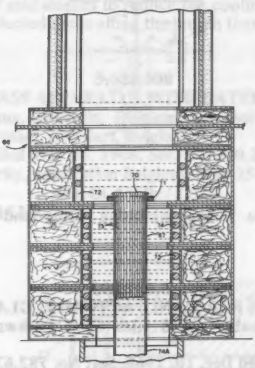
A new and improved method for preparing and applying sheer thinning gel to glass fibers wherein the improvement comprises introducing the treatments, after preparation, into closed collapsible containers, controllably advancing the treatments to an application zone, and applying the treatments uniformly to the glass fibers.

3,622,291

TUBE UNITING WITH END FRACTURES

Horst G. Fleck, San Antonio, Tex.; Martin Rome, Princeton, and Joseph M. Wixted, Princeton Junction, N.J., assignors to Weston Instruments, Inc., Newark, N.J.

Filed June 3, 1969, Ser. No. 830,007
Int. Cl. C03c *23/20;* C03b *21/00*
U.S. Cl. 65—4 1 Claim



An illustrative embodiment of the invention is directed to method and apparatus for manufacturing microchannel devices. Typically, the individual glass tubes in a hexagonal bundle are sealed on one end to individual hangers from which they are suspended vertically in a furnace. A vacuum is drawn within the furnace so that the inner surfaces of the tubes, exposed to atmospheric pressure, will not collapse during heating and drawing. At temperature, the bundle is drawn and elongates under the controlled forces applied through a modified Atwood's machine to reduce the bundle cross section by a ratio of about 50 to 1. The elongated bundle is cut into lengths as it is drawn, and these individual lengths are stacked together within a tube of glass that has a higher melting point than the glass in the drawn lengths.
The channels are once more sealed and the assemblies are subjected to a secondary fusion process prior to slicing into thin discs. The annular glass rings are removed from the discs and the microstructures are placed in a molten wax bath in order to fill the channels with wax before grinding and polishing. After grinding and polishing, the wax is removed.

3,622,292

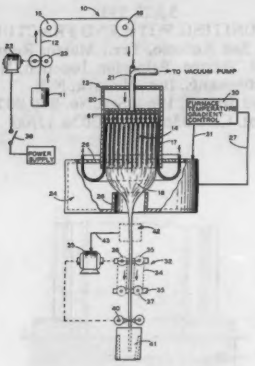
TUBE UNITING WITH FUSION BARRIER

Horst G. Fleck, San Antonio, Tex., assignor to Weston Instruments, Inc., Newark, N.J.

Filed June 3, 1969, Ser. No. 830,008
Int. Cl. C03c *23/20;* C03b *39/00*
U.S. Cl. 65—4 1 Claim

The invention herein described was made in the course of or under a contract or subcontract thereunder with the Department of the Army. An illustrative embodiment of the invention is directed to method and apparatus for manufacturing microchannel devices. Typically, individual glass tubes are suspended vertically in a furnace. A vacuum is drawn within the furnace so that the inner surfaces of the tubes, exposed to atmospheric pressure, will not collapse during heating and drawing. At temperature, the bundle is drawn in order to elongate and reduce the bundle cross section by a ratio of about 50 to 1. The elongated bundle is cut into lengths that are stacked together within a tube of glass that has a higher melting point than the glass in the drawn lengths.
The channels are once more sealed and the adjacent hexagonal lengths are subjected to a secondary fusion process

prior to slicing into thin discs. To prevent the inner lengths from cracking during cooling, the inner surface of the tube is



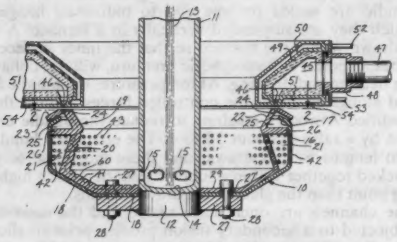
treated with a fusion inhibiting compound (e.g., boron nitride).

3,622,293

APPARATUS FOR MANUFACTURING GLASS FIBERS

Miles S. Firnhaber, 2648 Glen Cove Parkway, Pewaukee, Wis.

Filed Dec. 10, 1968, Ser. No. 782,635
Int. Cl. C03b *37/04*
U.S. Cl. 65—14 **1 Claim**



There is a cup-shaped rotor to receive molten glass and there is a lining for the rim portion and bottom of the rotor, the rim portion of the lining being apertured and spaced from an apertured rim portion of the rotor, there being an annular partition subdividing the annular space into an outer annular hot gas chamber and an inner annular molten glass-receiving chamber, said hot gas chamber having openings to receive hot gases from a burner during rotation of the rotor, and said lining being formed principally of lapped sector-shaped segments.

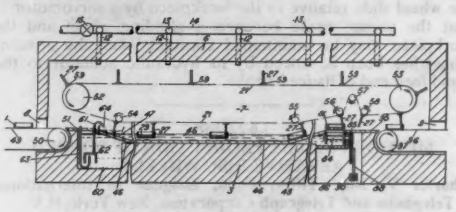
3,622,294

METHOD AND APPARATUS FOR PRODUCING COATED FLAT GLASS

David Gordon Loukes, Prescot; Albert Sidney Robinson, Southport, and Jack Lawrenson, St. Helens, all of England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England

Filed June 6, 1969, Ser. No. 831,074
Claims priority, application Great Britain, June 10, 1968, 27,564/68
Int. Cl. C03c *17/00*; C03b *23/00*
U.S. Cl. 65—30 **9 Claims**

A hollow glass article having predetermined characteristics, e.g. weathering, electrical conductivity, solar heat rejection, is produced by supporting the article, when hot, on a bath of molten metal, placing an electrically conductive material in the article, and passing a regulated electric cur-



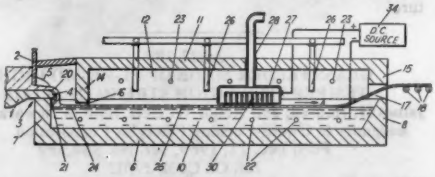
rent through the glass to impart electrolytically the desired surface characteristic to the glass.

3,622,295

METHOD AND APPARATUS FOR PRODUCING COATED FLAT GLASS

David Gordon Loukes, and William Ramsey Maltman, both of Prescot, England, assignors to Pilkington Brothers Limited, Liverpool, Lancashire, England

Filed July 7, 1969, Ser. No. 839,248
Claims priority, application Great Britain, July 15, 1968, 33,676/68
Int. Cl. C03c *17/00*; C03b *23/00*
U.S. Cl. 65—30 **13 Claims**



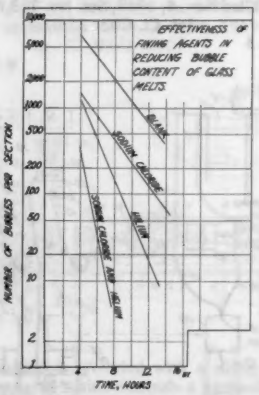
A concentration of elemental metal is built up in a glass surface by subjecting the glass, at a suitable elevated temperature, to ion exchange and ion reduction treatments alternately. The ion exchange may be effected electrolytically or by vapor deposition, and the ion reduction may be effected by exposing the glass surface to a reducing atmosphere.

3,622,296

METHOD OF FINING GLASS

Walter M. Buehl, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Aug. 29, 1966, Ser. No. 575,603
Int. Cl. C03b *5/16*,
U.S. Cl. 65—32 **8 Claims**



A method of fining glass melts by fusing a glass composition in an atmosphere in which helium is substantially absent,

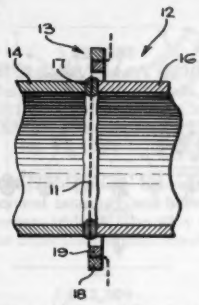
passing gaseous helium into the molten glass such that the helium diffuses through the glass and into the seeds whereby the seeds become expanded, and permitting the expanded seeds to rise through the molten glass and become eliminated at the surface.

3,622,297

METHOD OF FUSION SEALING WIRE GIRD IN TUBE

Victor G. Johanson, La Mesa, Calif., assignor to Stromberg Datagraphix, Inc., San Diego, Calif.

Filed Mar. 13, 1970, Ser. No. 019,154
Int. Cl. C03c *27/00, 29/00*
U.S. Cl. 65—42 5 Claims



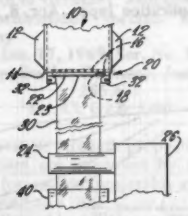
A method is described for mounting a grid within a glass tube wherein the grid is held during assembly in a taut condition, such as by a mounting frame, and is secured between two sections of the tube by glass frit. Also described is an electron tube in which a grid is mounted in such a manner.

3,622,298

METHOD AND APPARATUS FOR MANUFACTURING GLASS FILMS

George R. Machlan, and Craig L. Thom, both of Granville, Ohio, assignors to Owens-Corning Fiberglas Corporation

Filed Aug. 13, 1969, Ser. No. 849,765
Int. Cl. C03b *17/00*
U.S. Cl. 65—91 10 Claims



Method and apparatus for producing a thin sheet of thermoplastic material employing a container for holding a supply of the material where one of the container walls possesses openings through which the thermoplastic material leaves the container and using a reservoir region with an elongated outlet in communication with the openings. The material flows from the elongated outlet as a thin relatively wide stream and is attenuated into a thin sheet.

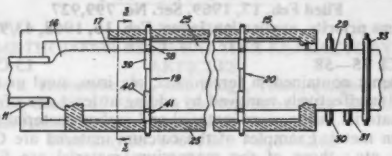
3,622,299

FLOAT GLASS METHOD AND APPARATUS FOR CONTROLLING TEMPERATURE

Francis L. Swillinger, Perrysburg, Ohio, assignor to Libbey-Owens-Ford Glass Company, Toledo, Ohio

Filed June 26, 1968, Ser. No. 740,193
Int. Cl. C03b *18/02*
U.S. Cl. 65—99 A 7 Claims

This application discloses a method of selectively controlling, regulating and/or varying the temperature of a moving, glass ribbon and/or of the molten metal bath in a float glass apparatus, which involves the use of a cooling member, extending across the float chamber and provided with an insulating sleeve or sleeves slideable thereon, and the selective positioning of said sleeves to reduce the cooling action of the member in selected areas along the length thereof.

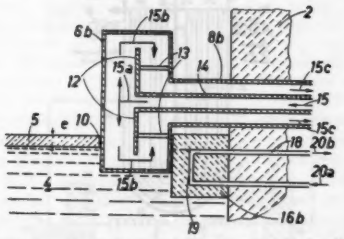


3,622,300

FLOAT GLASS APPARATUS WITH LATERAL GUIDES

Gustave Javaux, Brussels, Belgium, assignor to Glaverbel, S.A., Watermael, Boitsfort, Belgium

Filed May 20, 1968, Ser. No. 730,285
Claims priority, application Belgium, May 25, 1967, P 540
Int. Cl. C03b *18/02*
U.S. Cl. 65—182 R 10 Claims



An arrangement for controlling the edges of a float glass ribbon in apparatus in which the ribbon floats along a molten bath between two longitudinal walls and in which rotary discs are provided along the edges of the ribbon for rotation about their axes in a plane parallel to the lateral edges of the ribbon, the edges of the ribbon being controlled by the provision of guide pieces disposed between the rotary discs and the longitudinal walls for preventing laterally drifting glass from coming in contact with the longitudinal walls and for urging this glass back toward the main portion of the ribbon, the guide pieces being arranged so that the glass will not adhere thereto.

ERRATA

For Classes 62—229 and 71—29 see:
Patent Nos. 3,622,305 and 3,622,575

3,622,301

TREATMENT OF NICKEL CONTAINING MATERIAL TO REMOVE MOLYBDENUM

Ernest Mehl; Bauke Weizenbach, and Paul Kawulka, all of Fort Saskatchewan, Alberta, Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Filed Jan. 9, 1970, Ser. No. 001,898
Int. Cl. C22b *3/00, 49/00*
U.S. Cl. 75—3 5 Claims

A process for treating molybdenum contaminated nickel, iron and sulfur containing mattes, intermediates and residues to remove the molybdenum. The material in finely divided form is mixed with alkali and water and pelletized. The pellets are then roasted in air to convert the molybdenum into soluble alkali molybdate which is then leached from pellets with water.

3,622,302
METHOD FOR REMOVING ARSENIC FROM METALS OR ALLOYS

Noboru Hayashi, Amagasaki-shi; Hidemi Kaida, Kakogawa-shi, and Teruo Takatsuki, Nishinomiya-shi, all of Japan, assignors to Kobe Steel, Ltd., Kobe-shi, Japan

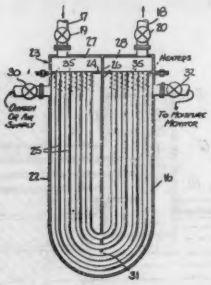
Filed Feb. 17, 1969, Ser. No. 799,927
Claims priority, application Japan, Feb. 15, 1968, 43/9751
Int. Cl. C21c 7/04; C22b 23/00
U.S. Cl. 75—58 13 Claims

Arsenic contained in ferronickel, pig iron, steel or crude nickel is effectively removed by adding at least one of calcium material, magnesium material and carbon material to the molten metal. Examples of the calcium material are Ca–Si, CaC_2, etc.; those of the magnesium material are Si–Mg, MgF_2, etc. and those of the carbon material are cokes powder, charcoal powder, etc.

3,622,303
METHOD FOR REMOVING HYDROGEN FROM LIQUID ALKALI METALS AND THE LIKE

Eugene F. Hill, Southfield, Mich., assignor to Atomic Power Development Associates, Inc., Detroit, Mich.

Filed May 23, 1966, Ser. No. 552,317
Int. Cl. C22b 27/00
U.S. Cl. 75—66 7 Claims

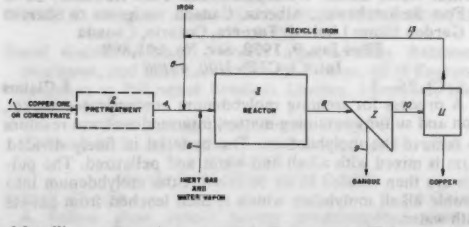


1. Method of removing hydrogen from liquid alkali metals which comprises: allowing such hydrogen to diffuse from such liquid metal at an elevated temperature through a bimetal barrier comprised of a first layer of metal selected from the group consisting of iron, nickel, tantalum and columbium and their alloys, which metal layer is in intimate contact with the liquid metal and a second layer of metal selected from the group consisting of palladium and platinum and alloys thereof, which second layer is in intimate contact with a gas containing oxygen, said first layer of metal providing resistance to corrosive attack on the barrier by the liquid metal, and said second layer of metal providing a catalytic action to convert the diffused hydrogen to H_2O.

3,622,304
FERROTHERMIC EXTRACTION OF COPPER

Sanaa E. Khalafalla, Minneapolis; Larry A. Haas, Burnsville, and Howard W. Kilau, St. Paul, all of Minn., assignors to The United States of America as represented by the Secretary of the Interior

Filed Mar. 3, 1970, Ser. No. 16,206
Int. Cl. C22b 15/14
U.S. Cl. 75—72 9 Claims

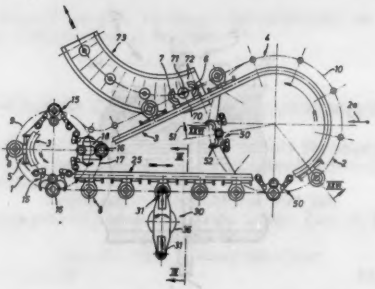


Metallic copper is extracted from nonsulfidic copper minerals by means of a solid state cementation technique in which metallic iron is reacted with copper minerals at temperatures above about 500° C.

3,622,305
MACHINE FOR THE PRODUCTION OF CONTAINERS OR THE LIKE OF VITREOUS MATERIAL

Kurt Becker, Obernkirchen, Germany, assignor to Herman Heye, Obernkirchen, Germany

Filed Mar. 26, 1968, Ser. No. 716,196
Claims priority, application Germany, Apr. 1, 1967, H 62338
Int. Cl. C03b 9/00, 11/06
U.S. Cl. 65—229 21 Claims

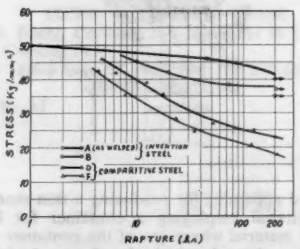


A press-and-blow container making machine wherein one of two rotary tables supports a set of blank molds receiving gobs from a gob feed and the other rotary table supports a set of blow molds serving to convert parisons obtained from the blank molds into finished containers. An endless flexible conveyor carries neck rings which transport parisons from the first table, past a preliminary treating unit and on to the blow molds. The neck rings also transport finished containers away from the blow molds.

3,622,306
CORROSION RESISTING LOW ALLOY STEEL

Masayuki Tanimura, Yokohama-shi; Elhachiro Sunami, Yokohama-shi, and Toshio Nakazawa, Kawasaki-shi, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 8, 1969, Ser. No. 814,276
Claims priority, application Japan, Apr. 8, 1968, 43/22809
U.S. Cl. 75—125 2 Claims



Corrosion resisting low alloy steel having stress-corrosion cracking resistability, good weldability and higher strength under some kind of environment containing H_2S and the like, which is chiefly composed of Cu–Cr–Al system constituents without addition of strengthening elements such as Ti, Nb, V and the like.

3,622,307
PRECIPITATION-HARDENABLE CHROMIUM-NICKEL STAINLESS STEEL

William C. Clarke, Jr., Baltimore, Md., assignor to Armco Steel Corporation, Middletown, Ohio

Filed May 15, 1968, Ser. No. 729,419
Int. Cl. C22c 39/20
U.S. Cl. 75—128 R 15 Claims

Martensitic precipitation-hardenable chromium-nickel stainless steel of high-impact strength. The steel comprises

about 10 percent to 17 percent chromium, about 3.7 percent to 10 percent nickel, with or without about 2.5 percent to 5 percent copper, 0.01 percent to 0.06 percent carbon, manganese not exceeding 0.50 percent, silicon not exceeding 0.15 percent, phosphorus not exceeding 0.30 percent, sulphur not exceeding 0.020 percent, nitrogen not exceeding 0.025 percent, with or without columbium up to about 0.25 percent and with or without titanium up to about 0.15 percent, and remainder substantially all iron. Where the chromium content exceeds 13 percent and copper is present in the amount of about 2.5 percent to 5 percent, at least three of the four ingredients manganese, silicon, sulphur and nitrogen are further limited: the manganese to 0.30 percent max., silicon 0.10 percent max. and each of sulphur and nitrogen 0.010 percent max.

3,622,308

HAFNIUM BASE ALLOY (IRIDIUM)

Vernon L. Hill, Niles, and Harry R. Nichols, Chicago, both of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Oct. 21, 1968, Ser. No. 769,357
Int. Cl. C22c *27/00*
U.S. Cl. 75—134 **7 Claims**

Hafnium base alloy containing between about 15 and about 35 weight percent tantalum and between about 2 and about 20 weight percent iridium. The alloy may also contain aluminum, silicon or chromium as additional alloying agents.

3,622,309

HAFNIUM BASE ALLOY (BORON)

Vernon L. Hill, Niles, and Harry R. Nichols, Chicago, both of Ill., assignors to IIT Research Institute, Chicago, Ill.

Filed Oct. 21, 1968, Ser. No. 769,397
Int. Cl. C22c *27/00*
U.S. Cl. 75—134 **7 Claims**

Hafnium tantalum alloy containing about 15 and about 35 weight percent tantalum, between about 0.03 and about 2.0 weight percent boron, and at least one additional alloying agent selected from chromium, silicon and aluminum.

3,622,310

PROCESS OF PREPARING NOBLE METAL MATERIALS HAVING IMPROVED HIGH TEMPERATURE STRENGTH PROPERTIES

Gerhard Reinacher, Hanau(Main), and Gerhard Zwingmann, Bruchkobel, both of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt (Main), Germany

Filed Jan. 17, 1969, Ser. No. 792,110
Claims priority, application Germany, Jan. 20, 1968, P 16 08 255.6
Int. Cl. G22c *5/00*
U.S. Cl. 75—165 **15 Claims**

The high temperature strength properties of noble metals, particularly platinum are improved by adding an element having an affinity for oxygen, preferably zirconium, and heating either (1) at 800° to 1,200° C. or (2) stepwise heating at 300° to 800° C. followed by heating at 800° to 1,400° C.

3,622,311

METHOD OF PREPARATION OF ALLOYS WITH A BASE OF MAGNESIUM-ZIRCONIUM FOR IMPROVING THE MECHANICAL PROPERTIES OF THESE ALLOYS AT HIGH TEMPERATURES

Rene Lucien, Neuilly-sur-Seine, and Emile Tetart, Basses Pyrenees, both of France, assignors to Messier, Paris, France

Filed June 27, 1968, Ser. No. 740,718
Claims priority, application France, July 5, 1967, 113,109
Int. Cl. C22c *23/00*
U.S. Cl. 75—168 **10 Claims**

A method of preparation of alloys with a base of magnesium-zirconium, in which the zirconium is introduced into the alloys in the form of a mother alloy Zr-Mg in the presence of a flux having a high content of potassium salts, especially potassium chloride and/or potassium fluoride, associated if required with other alkali and alkaline-earth salts, the potassium salts representing at least 60 percent and preferably between 70 and 90 percent by weight of the salts introduced into the molten bath, said salts also representing between 7 and 12 percent by weight of the molten metal. A purifying flux is employed representing between 2 and 4 percent by weight of the molten metal, and manganese is introduced into the molten alloy in the form of manganese chloride.

3,622,312

METHOD FOR REJUVENATING REFRACTORY ARTICLES

Cressie E. Holcombe, Jr., Oak Ridge, Tenn., assignor to The United States of America as represented by the United States Atomic Energy Commission

Filed July 23, 1969, Ser. No. 844,202
Int. Cl. B22f *7/08*
U.S. Cl. 75—224 **4 Claims**

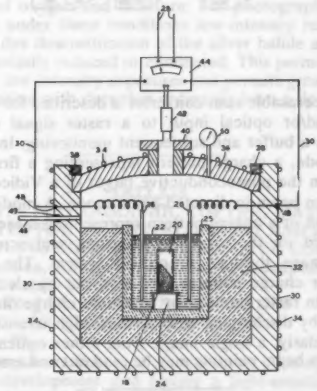
Refractory metal products damaged by oxidation are restored to their original condition by heating the damaged products in a reducing atmosphere to a temperature adequate to successively reduce the oxide to the metal and sinter the metal.

3,622,313

HOT ISOSTATIC PRESSING USING A VITREOUS CONTAINER

Charles J. Havel, 162 Proctor Blvd., Utica, N.Y.

Continuation-in-part of application Ser. No. 636,700, May 8, 1967. This application Feb. 28, 1968, Ser. No. 734,822
Int. Cl. B22f *3/14*
U.S. Cl. 75—226 **11 Claims**



Hot compacting of metallic powders in a vitreous evacuated container of a predetermined shape corresponding to the shape of the densified object desired by subjecting the container to a temperature sufficient to render the container plastic and the contents densifiable, by the application of external pressure upon the container walls.

3,622,314

SYSTEM FOR REPULSION DEVELOPMENT IN ELECTROPHOTOGRAPHY

Yasuo Tamai; Seiji Matsumoto; Masamichi Soto, and Satoru Honjo, all of Saitama, Japan, assignors to Fuji Photo Film Company, Ltd., Kanagawa, Japan

Filed July 1, 1968, Ser. No. 741,519
Claims priority, application Japan, July 1, 1967, 42/42253
Int. Cl. G03g *13/22*
U.S. Cl. 96—1 **1 Claim**

System for developing electrostatic images by repulsion development to allow full development of areas bearing uniform charge. An insulating developing electrode bearing charge controlled electrostatically to decay at the same rate as charge from the latent image is placed adjacent to the latent image bearing surface, and both are spaced a uniform distance from a conductor. This allows the electric field

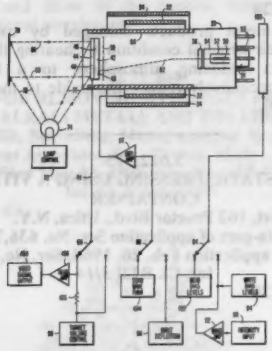
produced to become zero in that part to which no particles are to adhere.

3,622,315

PHOTOERASABLE SCAN CONVERTER

John W. Brookman, Saratoga; John B. Murphy, and Zack D. Reynolds, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1968, Ser. No. 775,861
Int. Cl. G03g ; H04n *5/76*; H01j *31/48*
U.S. Cl. 96—1 R **14 Claims**



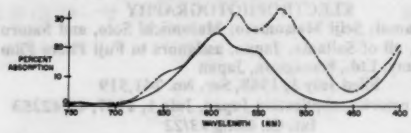
A photoerasable scan converter is described for converting digital and/or optical input to a raster signal output for storage in a buffer and subsequent monitoring. In combined image mode, a charge pattern representing a first image is painted on the photoconductive target of a Vidicon tube by an electron beam in directed-beam mode. A modification or modulation of a charge pattern representing a second image is provided on the target by exposing said screen to the second image through an optical system. The combined images, or charge patterns, are read out by electron beam scanning in raster mode. Any remanent charge on the target is erased by discharging with a short, high intensity flash of light. Similarly, a single image from either optical exposure or electron beam painting may be read out and erased.

3,622,316

PHOTORESPONSIVE ARTICLES COMPRISING MULTILAYER SPECTRAL SENSITIZATION SYSTEMS

George R. Bird, Concord, and Alan E. Rosenoff, Waltham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 401,677, Oct. 5, 1964, now abandoned. This application Mar. 4, 1969, Ser. No. 804,254
Int. Cl. G03g *5/08*; G03c *1/28*
U.S. Cl. 96—1.7 **16 Claims**



Photoresponse of a given photosensitive medium is enhanced by utilizing a spectral sensitization system which comprises a layer of a cyanine spectral sensitizing dye to said photosensitive medium and, superposed thereover, at least one layer of an energy absorbing and transmitting material which possesses a higher intrinsic energy absorption frequency than the energy absorption frequency of the immediately preceding layer, and an intrinsic energy transmitting frequency which overlaps the energy absorption frequency of the next preceding layer, thereby providing a radiationless circuit capable of transmitting photon-excitation-derived energy to said photosensitive medium.

3,622,317

PHOTORESPONSIVE ARTICLES COMPRISING PSEUDO-POLYMERIC SPECTRAL SENSITIZATION SYSTEMS

George R. Bird, Concord, and Alan E. Rosenoff, Waltham, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation-in-part of application Ser. No. 438,124, Mar. 8, 1965, now abandoned. This application Apr. 16, 1969, Ser. No. 816,800
Int. Cl. G03g *5/08*; G03c *1/28*
U.S. Cl. 96—1.7 **24 Claims**

Photoresponse of a given photosensitive element is enhanced by utilizing a spectral sensitization system adsorbed to said photosensitive element, said system comprising a layer of spectral sensitizing dye material comprising non-repetitive segments, each of said segments more distal from said photosensitive element than the preceding segment possessing a higher intrinsic energy absorption frequency range than the energy absorption frequency range of the immediately preceding segment, and an intrinsic energy transmitting frequency range which overlaps the energy absorption frequency range of the next preceding segment thereby providing a radiationless circuit capable of transmitting photon-excitation-derived energy to said photosensitive element.

3,622,318

PHOTOGRAPHIC MATERIALS AND PROCESSES

Francis J. Evans, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 20, 1970, Ser. No. 021,469
Int. Cl. G03c *7/00, 5/44, 1/84*
U.S. Cl. 96—22 **24 Claims**

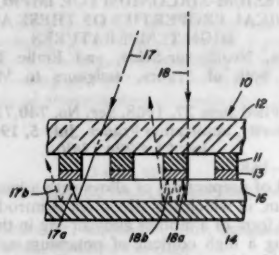
Light-sensitive photographic silver halide emulsions and elements are provided which feature converted-halide silver halide grains in which the halide consists of at least 50 mole percent bromide and up to 10 mole percent iodide, any remaining halide being chloride; the surface of said grains being chemically sensitized; and, said silver halide grains having contiguous thereto a photographic color coupler. Processes for producing photographic color images are also provided wherein emulsions and elements of the type described above, after exposure, are reacted with an aromatic primary amino color developing agent to form a dye image.

3,622,319

NONREFLECTING PHOTOMASKS AND METHODS OF MAKING SAME

Donald Jex Sharp, Princeton, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 20, 1966, Ser. No. 593,610
Int. Cl. G03c *5/04*
U.S. Cl. 96—27 **1 Claim**



A nonreflecting photomask comprises a pattern of an anodized, film-forming material on a transparent substrate.

The thickness of the anodic oxide is chosen such that when the mask is employed in selectively exposing a photoresist-coated body to light (by placing the oxide against the photoresist), destructive interference prevents light reflected from the body to the oxide from being re-reflected to the photoresist. Thus, undesirable exposure of masked portions of the photoresist is precluded.

3,622,320

THERMOGRAPHIC PROCESSES AND ELEMENTS UTILIZING PHOTOCROSSLINKABLE POLYESTERS

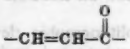
Frank D. Allen, deceased, late of Rochester, N.Y. (by Mona Armstrong Allen, executrix) Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

and a continuation-in-part of 595,998, Nov. 21, 1966, now abandoned. This application Feb. 29, 1968, Ser. No. 709,496

Int. Cl. G03c *11/12*

U.S. Cl. 96—28 20 Claims

Photocrosslinkable polyesters prepared with 50 mole percent of at least one diol moiety and 50 mole percent of at least two hydroxy-free dicarboxylic acid moieties, about 5 to 45 mole percent, based on the polyester, of the dicarboxylic acid moieties containing a light-sensitive grouping having the formula



are useful in a wide variety of photothermographic elements.

3,622,321

PHOTODIMERIZATION AND PHOTOPOLYMERIZATION OF BIS-MALEIMIDES

Georges Joseph Smets, Heverlee, and Frans Carolus De Schuijver, Leuven, both of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

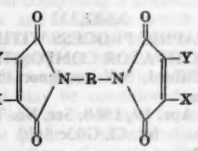
Filed Nov. 10, 1969, Ser. No. 875,571

Claims priority, application Great Britain, Dec. 24, 1968, 61,434/68

Int. Cl. G03c *1/70*

U.S. Cl. 96—35.1 8 Claims

A photographic element comprising a support having a coating comprising a polymer of styrene and a bis-maleimide of the formula:



wherein:

R represents an alkylene group comprising one to 12 carbon atoms, a $-CH_2-Z-CH_2-$ group or an arylene group, Z being O, S or NH, and X and Y represent hydrogen, chlorine, or methyl, and the process of making the photographic element is described.

3,622,322

PHOTOGRAPHIC METHOD FOR PRODUCING A METALLIC PATTERN WITH A METAL RESINATE

Frederick W. Brill, Lancaster, Pa., assignor to RCA Corporation

Filed Sept. 11, 1968, Ser. No. 759,232

Int. Cl. G03c *5/00*

U.S. Cl. 96—36.2 5 Claims

To produce a metallic pattern on a surface: (1) coat the surface with a photosensitive coating comprised of an organic photoresist and a substantially transparent metal resinate, (2) expose the coating to a pattern of light, (3) develop the coating to produce a metal resinate pattern, (4) and then heat the pattern to convert the metal resinate pattern to a pattern of metal.

3,622,323

PROCESS OF PRODUCING A RELIEF CONTOUR EFFECT FOR TOPOGRAPHIC MAPS

Alfred M. Fraser, 12012 Dewey Road, Silver Spring, Md.

Filed Dec. 3, 1969, Ser. No. 881,675

Int. Cl. G03c *5/04*

U.S. Cl. 96—41 5 Claims

A photomechanical process of producing a relief contour effect for topographical maps by means of using a positive transparency form of the topographical map, a negative transparency form produced therefrom, a positive mask transparency prepared for a portion of the map contour lines, a negative mask transparency produced therefrom, a three-ply overlay of the negative transparency positive mask-positive transparency assembled and a positive print obtained therefrom, a three-ply overlay of the negative transparency negative mask-positive transparency assembled and a negative print obtained therefrom, and a final print prepared from both the positive and negative prints.

3,622,324

PHOTOGRAPHIC EXPOSURE UNDER CONDITIONS TO IMPROVE SENSITIVITY OF PHOTOGRAPHIC EMULSIONS

William C. Lewis, and Thomas J. James, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 13, 1968, Ser. No. 736,650

Int. Cl. G03c *5/32, 5/04*

U.S. Cl. 96—45.2 5 Claims

Under high vacuum, a photographic silver halide layer is evacuated of oxygen and moisture. For photographic exposures made under these conditions low-intensity reciprocity failure and dye desensitization of the silver halide are found to be substantially reduced or eliminated. This permits higher speeds with low-intensity exposures and permits greater spectral sensitization with dyes that ordinarily have a desensitization effect.

3,622,325

DIAZOTYPE PHOTOGRAPHIC COPYING MATERIAL ADAPTED FOR WET DEVELOPMENT AND FOR PRODUCING COPIED IMAGE IN BLACK COLOR

Shigeaki Toshida, Kanagawa, Prefecture, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Mar. 7, 1968, Ser. No. 711,205

Int. Cl. G03c *5/34, 1/58, 1/54*

U.S. Cl. 96—49 2 Claims

A two-component diazotype photographic copying material for wet development and having a light-sensitive layer which contains at least one light-sensitive aromatic diazo compound and also contains at least one each of the three kinds of coupling components which are adapted to form a blue dye, a bluish-violet dye and a yellow dye, respectively, when said coupling components are made to react with said diazo compound, is capable of providing a copied image in a very clear black color when developed with an alkaline aqueous solution containing no coupling component.

3,622,326

DIAZOTYPE LIGHT-SENSITIVE COPYING PAPERS INTENDED FOR WET DEVELOPMENT AND FOR USE IN THE PREPARATION OF INTERMEDIATES

Shigeaki Yoshida, Kanagawa, Japan, assignor to Kabushiki Kaisha Ricoh, Tokyo, Japan

Filed Mar. 20, 1968, Ser. No. 714,425

Int. Cl. G03c *5/34, 1/58, 1/54*

U.S. Cl. 96—49 3 Claims

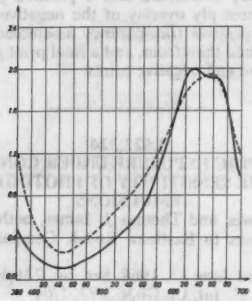
A diazo-type copying paper which is prepared by coating, on a light-transmitting base, a light-sensitive composite containing a diazonium compound obtained from 1-amino-4-dialkylamino-monochloro benzene and also containing a coupling component consisting of 2-alkyl-5-alkyl-4-morpholino-methyl-phenol, provides an excellent intermediate copy when developed according to the wet development process.

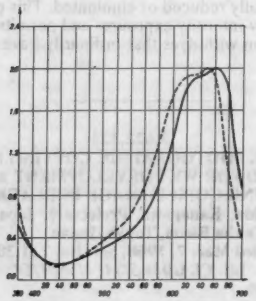
3,622,327

PROCESS FOR PREPARING COLOR IMAGES

Jan Jacken, Hove; Wilhelmus Janssens, Aarschot, and Marc Godfried Mennens, Wilrijk, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Feb. 4, 1970, Ser. No. 008,525
Claims priority, application Great Britain, Feb. 4, 1969, 5,979/69
Int. Cl. G03c 5/50
U.S. Cl. 96—54 12 Claims





Color development in the presence of oxidatively coupling quinolone sulphonylhydrazone couplers to improve the absorption characteristics of the cyan dyes produced and reduce the undesirable blue fog in the cyan dye layer.

3,622,328

PROCESS FOR PRODUCING PHOTOGRAPHIC COLOR IMAGES

Robert J. Pollet, Berchem; Raphael K. Van Poucke, Berchem, and Arthur Henri De Cat, Mortsel, all of Belgium, assignors to Gevaert-Agfa N.V., Mortsel, Belgium

Filed Apr. 4, 1968, Ser. No. 719,243
Claims priority, application Great Britain, Apr. 11, 1967, 16,456/67
Int. Cl. G03c 7/00, 1/40
U.S. Cl. 96—55 14 Claims

2-equivalent couplers for forming cyan dye images in color photography of the naphthol type and characterized by a sulfonyl or sulfinyl group in the coupling position are provided. Such couplers have the inherent advantages of 2-equivalent color couplers and, additionally, a high degree of reactivity, little or no tendency to produce stains by nonimagewise coupling and have all of the desirable attributes of prior art cyan-forming couplers.

3,622,329

PHOTOGRAPHIC SILVER HALIDE EMULSIONS WITH INCREASED SENSITIVITY

Harald Huckstadt, Cologne-Stammheim; Wilhelm Saleck, Schildgen, Bergisch; August Randolph, Leverkusen, and Edwin Ranz, Leverkusen, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 26, 1969, Ser. No. 802,654
Claims priority, application Germany, Apr. 26, 1968, P 17 72 292.8
Int. Cl. G03c 1/28, 5/24
U.S. Cl. 96—65 8 Claims

Photographic silver halide emulsions having increased sensitivity, containing as a chemical sensitizer, an S-alkyl-dithianium salt and a process for developing photographic silver halide emulsions in the presence of such a salt.

3,622,330

LITHOGRAPHIC DEVELOPER CONTAINING AN ANIONIC FATTY ALCOHOL SULFATE AND A NONIONIC POLYETHYLENE OXIDE SURFACTANT

George Devasia Valiaveedan, Freehold Township, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1969, Ser. No. 889,864
Int. Cl. G03c 5/30
U.S. Cl. 96—66 7 Claims

An aqueous photolithographic developer comprising a hydroquinone or a substituted hydroquinone developing agent, an anionic fatty alcohol sulfate and a nonionic polyethylene oxide surfactant in combination with conventional developer adjuvants, e.g., antifoggants, buffers, preservatives, etc.

3,622,331

POLYCARBONATE-CINNAMATE PHOTOPOLYMER

Daniel C. Thomas, Covina, Calif., assignor to Lithoplate, Inc., Covina, Calif.

Filed June 23, 1969, Ser. No. 835,788
Int. Cl. C08g 17/13
U.S. Cl. 96—68 4 Claims

A polycarbonate resin is reacted with a cinnamoylating agent such as cinnamoyl chloride to produce a novel photopolymer, a polycarbonate-cinnamate resin. The photopolymers are useful for making photoresist plates and presensitized negative-working printing plates.

3,622,332

PHOTOGRAPHIC PROCESS WITH IMPROVED ACTIVATOR COMPOSITION

John R. Kane, Piffard, N.Y., assignor to Itek Corporation, Lexington, Mass.

Filed Apr. 19, 1968, Ser. No. 722,551
Int. Cl. G03c 5/30
U.S. Cl. 96—66.3 16 Claims

An improved photographic process for developing a photographic element having a silver halide emulsion layer with silver halide developing agents disposed therein or contiguous thereto as a separate layer comprising (1) exposing said photographic element and (2) applying to the exposed element an alkaline activator composition containing a small amount of a thiosulfate, preferably an alkali or alkaline earth metal or ammonium thiosulfate, having a concentration of from 2 to 20 grams per liter. It is believed that the thiosulfate causes unexposed silver halide to dissolve and plate on the image area simultaneously with chemical development, thereby creating a blue-black image tone of increased maximum density and sharpness.

3,622,333

EPOXY RESIN VEHICLE FOR VESICULAR FILM

Oswald James Cope, Santa Cruz, Calif., assignor to Microx Corporation, Santa Clara, Calif.

Filed Oct. 15, 1969, Ser. No. 866,753
Int. Cl. G03c 1/52, 1/60
U.S. Cl. 96—75 6 Claims

Vehicle for vesicular film having improved image stability particulary at higher temperatures as well as improved sta-

bility of the vehicle itself at higher temperatures and in integrity of its chemical structure. The vesiculating agent is carried in a thermoplastic linear polyhydroxyether polymer of an epihalohydrin such as epichlorohydrin and a dihydric phenol such as 2,2'-bis(p-hydroxyphenyl) propane.

3,622,334

PHOTOPOLYMERIZABLE COMPOSITIONS AND ELEMENTS CONTAINING HETEROCYCLIC NITROGEN-CONTAINING COMPOUNDS

Robert Bartholomew Hurley, Matawan, and Sam Lazarus, Englishtown, both of N.J., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 31, 1969, Ser. No. 889,742
Int. Cl. G03c 1/70
U.S. Cl. 96—83 9 Claims

A photopolymer resist composition comprising (A) an ethylenically unsaturated compound containing at least one polymerizable ethylenic group (CH_2 C) capable of forming a high polymer by photoinitiated addition polymerization; (B) a thermoplastic organic polymer binder and (C) a photoactivatable addition polymerization initiator provides improved adhesion to a solid support in aqueous plating solutions when the composition includes a small amount of a compound having the formula

where R is substituted or unsubstituted ortho arylene, X is CH_2, NH, S, O, or Se; Z is N or C–Y, where Y is H, NH_2, halogen, alkyl.

3,622,335

COPOLYMERS OF AN ALPHA ACRYLONITRILE AND A STYRENE USED AS VEHICLES IN VESICULAR MATERIALS

Norman Thomas Notley, Box 462, Sierra Madre, Calif.

Filed Jan. 13, 1970, Ser. No. 002,981
Int. Cl. G03c 1/52, 1/72
U.S. Cl. 96—91 9 Claims

This invention is directed to a light-sensitive vesicular imaging composition comprising a sensitizer which liberates gas on irradiation and a binder which is essentially a copolymer of an alpha alkyl acrylonitrile with a styrene-type comonomer, including styrene per se and alpha and aryl substituted styrenes. The composition is coated as a thin film, carefully dried and may be conditioned with a hot water treatment or otherwise prenucleated to secure an imaging medium of superior qualities. After irradiation of this novel composition with a pattern of actinic radiation, gas released in the selected areas may be developed by overall heating to a visible record.

3,622,336

VESICULAR LIGHT-SENSITIVE MATERIALS COMPRISING A COPOLYMER OF CHLOROACRYLONITRILE AND METHACRYLONITRILE

Norman Thomas Notley, Box 402, Sierra Madre, Calif.

Filed Jan. 27, 1970, Ser. No. 006,321
Int. Cl. G03c 1/52, 1/72
U.S. Cl. 96—91 6 Claims

This invention is directed to a light-sensitive vesicular imaging composition comprising a sensitizer which liberates gas on irradiation and a binder which is essentially a copolymer of alpha-chloroacrylonitrile and alpha-methacrylonitrile. The composition is coated as a thin film, carefully dried and prenucleated to secure an imaging medium of generally superior qualities and of particularly high photosensitivity. After irradiation with a pattern of actinic radiation, gas release in the selected areas may be developed by overall heating to a visible record.

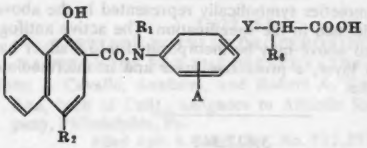
3,622,337

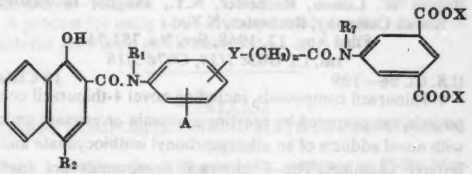
CYAN COLOR FORMERS FOR COLOR PHOTOGRAPHY

Alex P. Altavilla, Johnson City; Walter Hoffstadt, Vestal, and Emil Rauch, Port Dickinson, all of N.Y., assignors to GAF Corporation, New York, N.Y.

Filed Aug. 2, 1968, Ser. No. 749,650
Int. Cl. G03c 1/40
U.S. Cl. 96—100 16 Claims

Light-sensitive silver halide photographic emulsions containing a nondiffusing cyan coupler having one of the following formulas:





wherein R_1 is H or alkyl; R_2 is H, halogen or SO_3X, X being H or a water-solubilizing cation; A is an electron-releasing group; Y is -O- or $—CH_2—$; R_6 is H or carboxyphenylene; R_7 is an alkyl group of one to 18 carbon atoms, and *n* is an integer from one to three.

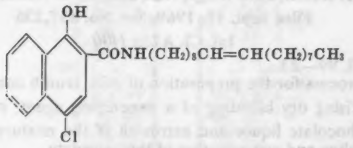
3,622,338

LIGHT-SENSITIVE SILVER HALIDE COLOR PHOTOGRAPHIC EMULSIONS

Keiji Kasai, and Yosinobu Nakagawa, both of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Sept. 24, 1969, Ser. No. 862,643
Claims priority, application Japan, Sept. 25, 1968, 43/68766
Int. Cl. G03c 1/40
U.S. Cl. 96—100 1 Claim

Improved light-sensitive silver halide color-photographic emulsions contain a protected cyan coupler having improved solubility in coupler solvents and represented by the formula



3,622,339

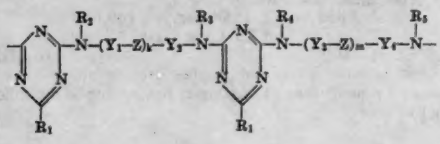
POLYMERIC ANTIFOGGANT CONTAINING AT LEAST FOUR TRIAZINE RINGS

Fumihiko Nishio; Nobuo Yamamoto, and Jun Hayashi, all of Minami-Ashigara Machi, Ashigara-Kamigun Kanagawa, Japan, assignors to Fuji Shashin Film Kabushiki Kaisha

Filed July 8, 1968, Ser. No. 743,007
Claims priority, application Japan, July 7, 1967, 42/43765
Int. Cl. G03c 1/34, 1/72
U.S. Cl. 96—109 8 Claims

A photographic silver halide light-sensitive element illustrating a marked reduction in fog which has a layer which

contains a compound having a repeating unit represented by the following formula:



The specific moieties symbolically represented in the above formula are defined in the specification. The active antifoggant illustrated above may be incorporated into a silver halide emulsion layer, a protective layer and in intermediate layer or the like.

3,622,340

4-THIOURACIL COMPOUNDS AS FOG INHIBITORS

Robert W. Lamon, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 12, 1968, Ser. No. 751,744
Int. Cl. G03c 1/34; C07d 5/18
U.S. Cl. 96—109 18 Claims

4-Thiouracil compounds, including novel 4-thiouracil compounds, are prepared by reacting ammonia or primary amine with novel adducts of an alkoxycarbonyl isothiocyanate and a tertiary enamine. The 4-thiouracil compounds are useful photographic fog inhibitors.

3,622,341

ZINC OXIDE AND TITANIUM OXIDE SENSITIZED BY AZO DYES

Wndell Maurice Lee, Trenton, N.J., assignor to RCA Corporation

Filed Aug. 1, 1969, Ser. No. 846,942
Int. Cl. G03g 5/02, 5/08
U.S. Cl. 96—1.6 5 Claims

A spectrally sensitized electrophotographic recording element includes a photoconductive layer that comprises a zinc oxide and/or titanium dioxide photoconductor in a film-forming resin and a small quantity of at least one azo dye that has either an o,o′-dihydroxy or an o-amino-o′-hydroxy azo structure.

3,622,342

PROCESS FOR PREPARATION OF MILK CRUMB COMPOSITIONS

Irving I. Rusoff, Park Ridge, N.J., assignor to Nabisco, Inc.

Filed Sept. 11, 1969, Ser. No. 857,236
Int. Cl. A23g 1/00
U.S. Cl. 99—23 8 Claims

A process for the preparation of milk crumb compositions comprising dry blending of a sweetening agent, milk solids and chocolate liquor and extrusion of the mixture followed by cooling and comminution of the extrudate.

3,622,343

EMULSIONS OF FLAVORING OILS AND PROCESS FOR MAKING SAME

Mohammad H. Anwar, Tappan, and Marvin Calderon, Queens, both of N.Y., assignors to Pepsico, Inc., Long Island City, N.Y.

Filed Dec. 12, 1963, Ser. No. 329,968
Int. Cl. A23l 1/22, 1/00
U.S. Cl. 99—78 12 Claims

Caramel is used as an emulsifying agent in preparing an aqueous emulsion of a water insoluble flavoring oil. The emulsion is utilized in preparing flavored beverage syrups and flavored beverages.

3,622,344

SOPHOROSIDE ESTERS IN PREPARED FOOD PRODUCTS

Robert P. Allingham, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Filed Apr. 2, 1969, Ser. No. 812,863
Int. Cl. A21d 2/16; A23l 1/00, 1/24
U.S. Cl. 99—80 R 11 Claims

Sophoroside alkyl esters of certain C_{16} to C_{18} monohydroxy fatty acids, wherein the alkyl groups contain from two to about 18 carbons, show highly desirable effects in improving the properties and general eating characteristics of starch-based and animal or vegetable fat emulsion-based food products at levels between about 0.01 and about 3 percent by weight on an as consumed basis.

3,622,345

PROPYLENE GLYCOL MONOESTER EMULSIFIER-CONTAINING SHORTENINGS AND CAKE MIXES CONTAINING THE SAME

Monoj K. Gupta, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of application Ser. No. 876,114, Nov. 12, 1969, now abandoned. This application June 9, 1971, Ser. No. 147,310
Int. Cl. A23d 5/00; A21d 13/08
U.S. Cl. 99—94 14 Claims

Particular emulsifier-containing shortenings are suitable for use in cake mixes which are shelf stable and which can be utilized to provide high-specific volume, good grain structure, excellent eating quality cakes. These shortenings have a relatively high-solids content at room temperature, a relatively low-solids content at mouth temperature and some solids content at the highest temperatures encountered during storage. The shortenings comprise a propylene glycol monoester emulsifier with a particular ratio of fatty acid ester chains to provide high specific volume cakes.

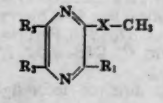
3,622,346

PYRAZINE DERIVATIVES AS NUTLIKE FLAVORING AGENTS AND METHOD OF USE

Max Winter, Petit-Lancy, Geneva, Switzerland, assignor to Firmenich & Cie, Geneva, Switzerland

Continuation-in-part of application Ser. No. 661,485, June 26, 1967, now abandoned, Original application Feb. 21, 1964, Ser. No. 346,420, now Patent No. 3,328,402. Divided and this application Sept. 17, 1968, Ser. No. 760,341
Int. Cl. A23l 1/22
U.S. Cl. 99—140 R 20 Claims

A flavoring agent, a method for imparting to foodstuffs and beverages the flavor and taste similar to that of roasted hazelnuts, peanuts or almonds by adding thereto at least one compound of the group consisting of A and B, A compounds being represented by the formula



wherein X represents a member selected from the group consisting of oxygen and sulfur and one of the symbols R_1, R_2 and R_3 represents a methyl radical, the other two representing hydrogen; B compound being 2-ethoxy-3-methylpyrazine.

3,622,347
TREATMENT OF SHRIMP TO REMOVE NONEDIBLE PARTS

Otto T. Aepli, Southgate, and Ray W. Schultz, Wyandotte, both of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

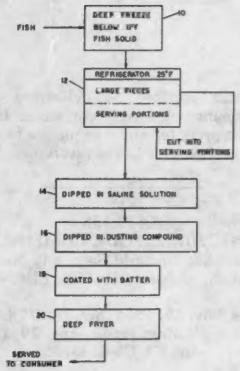
Filed Feb. 25, 1969, Ser. No. 802,260
Int. Cl. A22c *29/00*
U.S. Cl. 99—111 5 Claims

Nonedible parts of shrimp are removed by immersing shrimp in an aqueous solution containing hypochlorite ions or caustic soda.

3,622,348
FISH PREPARATION METHOD

Denis J. Malin, Columbus, Ohio, assignor to Arthur Treacher's Fish & Chips, Inc., Columbus, Ohio

Filed July 16, 1969, Ser. No. 842,260
Int. Cl. A22c *25/00*
U.S. Cl. 99—111 2 Claims



Uncooked fish, initially frozen below 0° F. is stored for at least 8 hours in an unopened refrigerator which is maintained at approximately 25° F. and the temperature of the fish is thus raised to 25° F. When the fish temperature becomes approximately uniformly 25° F., the fish attains an intermediate consistency which is characterized by the fish having neither the soft fleshy consistency of completely thawed fish nor the solid hard consistency of completely frozen fish. While at this intermediate consistency, the fish may conveniently be and is cut into serving portions, dipped in a saline solution, coated with granulated rice, and then coated with a batter, all without loss of flavor. With the fish still remaining substantially at approximately 25° F., it is inserted in a hot cooking oil for deep frying and permitted to sink in the oil. The fish will rise and float in the cooking oil after it has been properly cooked. It therefore is removed from the cooking oil substantially immediately after it rises and floats.

3,622,349
HONEY-MALT FLAVOR MATERIAL AND PROCESS OF PREPARATION

William A. Mitchell, Lincoln Park, N.J., and Howard D. Stahl, Tarrytown, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 15, 1969, Ser. No. 791,496
Int. Cl. A23l *1/22, 1/04*
U.S. Cl. 99—140 R 5 Claims

Low-calorie food flavoring and texture enhancing material prepared by drum drying an aqueous solution of low jelly grade pectin and artificial sweeteners.

3,622,350
PROCESS OF COATING TABLE SALT

Paul A. Hammes, Westfield, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed May 12, 1969, Ser. No. 823,992
Int. Cl. A23l *1/22*
U.S. Cl. 99—143 1 Claim

Table salt and like small particulate food materials are enclosed in a coating of ethylcellulose having a viscosity of 4 to 50 and an ethyoxyl content of 45.5 to 49.5 percent, the coating serving to protect the coated material from water but being removable or made permeable in gastrointestinal fluids.

3,622,351
TERTIARY-BUTYLHYDROPEROXIDE AS A BACTERICIDE FOR THE PRESERVATION OF FISH

John J. Cavallo, Anaheim, and Robert A. Reynolds, Santa Ana, both of Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Filed Apr. 1, 1969, Ser. No. 812,337
Int. Cl. A23b *3/00, 3/06*
U.S. Cl. 99—158 5 Claims

A process for using t-butylhydroperoxide for the control of bacterial growth on fish is disclosed.

3,622,352
EDIBLE COMPOSITIONS AND METHOD FOR COATING THEM

Frank L. Daylor, Jr., Richmond, Va., assignor to Philip Morris, Incorporated, Richmond, Va.

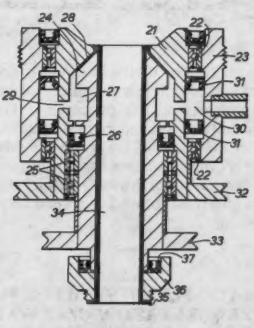
Filed Apr. 30, 1970, Ser. No. 33,483
Int. Cl. A23g *3/30;* A23l *1/26*
U.S. Cl. 99—166 10 Claims

The use of an alcohol solution of a desired flavoring acid such as citric acid to be applied to a sugar-coated core such as chewing gum, nuts, dragees, or confections. The alcohol is evaporated off, leaving the acid flavoring agent as a coating. Thereafter, an additional layer of sugar, shellac, or other similar substance may be applied to the acid-covered core.

3,622,353
SAUSAGE PREPARATION PROCESS

Noel James Bradshaw, Sharnbrook, and Kenneth William Taylor, Higham Ferrers, both of England, assignors to Lever Brothers Company, New York, N.Y.

Filed June 17, 1969, Ser. No. 834,009
Claims priority, application Great Britain, June 18, 1969, 28,919/68
Int. Cl. A23b *1/10*
U.S. Cl. 99—169 5 Claims



Collagen-coated food products, particularly sausages, are prepared by extruding the collagen in tubular form upon the foodstuff and then setting it, one or both surfaces of the collagen being subjected during extrusion to frictional forces

acting about the axis of extrusion. Such forces are conveniently applied by contrarotation of the inner and outer members of the die which is forming the collagen tube, the foodstuff being extruded simultaneously with the collagen through an axial bore in the inner member of the die.

3,622,354

EDIBLE COMPOSITION AND AEROSOL PACKAGE CONTAINING THE SAME

George Bernard Diamond, Glen Gardner, N.J.

Continuation-in-part of application Ser. No. 502,439, Oct. 22, 1965, now abandoned. This application July 29, 1968, Ser. No. 748,187

Int. Cl. A23g *1/00*

U.S. Cl. 99—189 **5 Claims**

The invention relates to syrups whose viscosity has been reduced to such a degree that they not only can be discharged from a valved pressurized container through a standard nozzle as distinguished from the special small diameter nozzle made necessary by known higher viscosity syrups, in the form of a high-velocity stream into a portable liquid, but will allow a sufficiently high sugar content to render the mix self-sterilizing.

3,622,355

AGGLOMERATED DEHYDRATED POTATO PRODUCT AND PROCESS

Roderick G. Beck, and Mounir A. Shatila, both of Blackfoot, Idaho, assignors to American Potato Company, San Francisco, Calif.

Filed Apr. 7, 1969, Ser. No. 814,519

Int. Cl. A23b *7/02, 7/03*

U.S. Cl. 99—207 **3 Claims**

An agglomerate of dehydrated potato particles that is reconstitutable without agitation to form a substantially homogenous dough even when disposed as a consolidated mass. The reconstituted potato dough exhibits uniform cohesive characteristics that allow for ready division into shapes suitable for french frying.

3,622,356

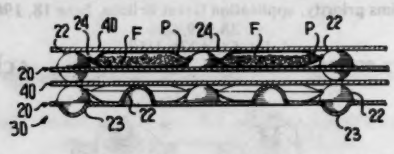
AUTOMATIC RETORT RACK SYSTEM FOR FLEXIBLE PACKAGES

Florren E. Long, La Grange, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

Filed Mar. 5, 1969, Ser. No. 804,457

Int. Cl. A23l *3/10*

U.S. Cl. 99—214 **6 Claims**



This disclosure relates to the thermal processing of foods in flexible packages. A rack is provided for supporting a plurality of packages during the processing. The rack is comprised of a plurality of spaced parallel plates, alternate ones of which are in the form of trays having bumps stamped in one side to form compartments for positioning the packages. The rack is disposed horizontally while the packages are loaded therein and then rotated to a vertical position preliminary to processing.

3,622,357

AUTOMATIC FEED SYSTEM FOR TREATING BREWERY PASTEURIZER WATER

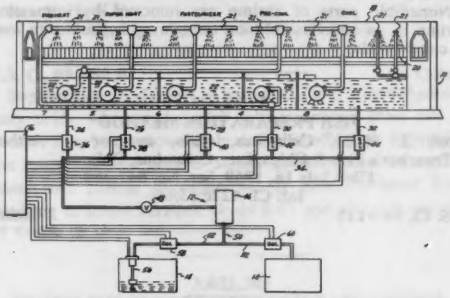
Hjalmar A. Tillman, Southgate, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed July 20, 1970, Ser. No. 56,292

Int. Cl. B65b *55/06*

U.S. Cl. 99—249 **10 Claims**

Brewery pasteurizing waters are automatically treated with chemical compounds, such as slimecides, water conditioners, corrosion inhibitors, and the like according to the present invention. The reservoirs from the pasteurizing waters communicate with sources of the chemical compounds through



suitable apparatus capable of delivering the chemicals thereat. Valve means operatively connected to timing means open and close in predetermined sequence to permit delivery of the chemical compounds to the reservoirs.

3,622,358

CERAMIC DIELECTRIC COMPOSITIONS

Tsundehiko Yoshioka; Hishashi Sato, and Naoki Suda, all of Akita-ken, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1968, Ser. No. 778,415

Claims priority, application Japan, Aug. 29, 1968, 43/61465

Int. Cl. C04b *35/46*

U.S. Cl. 106—39 R **1 Claim**

The ceramic dielectric materials of the present invention consist of a ternary solid solution $CaTiO_3$-$PbTiO_3$-$La_2O_3 \cdot 2TiO_2$ and $CaTiSiO_5$, a part of which forms a solid solution with the said ternary system. The said ceramic materials are suitable as temperature compensating capacitors.

3,622,359

FLUORINE OPAL GLASSES

Leslie F. Pither, Maumee, and Paul J. Sauve, Sylvania, both of Ohio, assignors to Owens-Illinois, Inc.

Filed July 9, 1969, Ser. No. 840,470

Int. Cl. C03c *3/04*

U.S. Cl. 106—54 **6 Claims**

Borosilicate opal glasses comprising fluorine and certain glass-forming oxides that have properties suitable for making opal glass items on conventional glass forming machinery. These glasses are substantially free of lithia and alkaline earth metal oxides.

3,622,360

RAMMING MIXES

Andrew B. Swanson, Chicago, and Rudolph T. Loher, Clarendon Hills, both of Ill., assignors to Nalco Chemical Company, Chicago, Ill.

Filed Feb. 24, 1970, Ser. No. 13,531

Int. Cl. C04b *35/10*

U.S. Cl. 106—65 **4 Claims**

An alumina-phosphoric acid ramming mix has extended shelf life imparted thereto by coating the alumina particles with an inhibitor selected from the group consisting of nitrilotriacetic acid and ethylenediamine-tetraacetic acid, the inhibitor preventing premature reaction between the alumina and phosphoric acid.

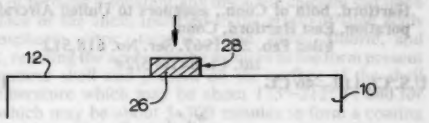
3,622,361
PRODUCTION OF INSULATING COATINGS BY SPRAYING
John Denis Pennington, Bolton, and William Ian Hay Winning, Yarm-on-Tees, both of England, assignors to Tac Construction Materials Ltd.
Filed Mar. 29, 1968, Ser. No. 717,418
Claims priority, application Great Britain, Mar. 29, 1967, 14,318/67
Int. Cl. C04b *31/06, 31/44*
U.S. Cl. 106—93 8 Claims
Compositions for forming insulating coatings by spraying mineral wool and fiber, cement or other binder and water are based on mineral wool, and include mineral oil and a surface-active agent or a cellulose ether.

3,622,362
ALCOHOL SOLUBLE CELLULOSE PROPIONATE ESTER
Charles H. Coney; Thomas J. Thompson, and Chester A. Bruner, all of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 8, 1968, Ser. No. 766,001
Int. Cl. C08b ; C09j *3/04*
U.S. Cl. 106—169 3 Claims
Cellulose propionate compositions having a propionyl content of from about 37 to about 44 percent by weight, a free hydroxylcontent from about 3.5 to about 8 percent by weight and an ASTM D–1343 viscosity of from about 0.02 to about 50 seconds, have been found to be soluble in hydrous ethanol at 70° F. These compositions are especially useful in ink formulations.

3,622,363
REDUCTION OF ALKALI IN CEMENT PRODUCTION
Edward M. Van Dornick, 9400 Whitmore St., El Monte, Calif.
Filed May 26, 1969, Ser. No. 827,592
Int. Cl. C04b *7/36*
U.S. Cl. 106—100 9 Claims
Hydraulic cements, including Portland cements, are produced to be alkali-free by calcination of finely ground raw mix fed to a columnar reaction zone wherein the reactants are fluidized by the introduction of air and fuel, the reaction zone gaseous effluent containing volatilized alkali being subjected to quench cooling to a temperature at which the alkali desublimes and becomes separable from the gas.

3,622,364
COLOR FORMER FOR PRESSURE SENSITIVE RECORDING PAPER AND PROCESS FOR PRODUCING SAME
Yujiro Sugahara, Tokyo; Kaichiro Miyazawa, Tsuruoka-shi; Tadahisa Nakazawa, Niigata-ken, and Masahiro Maeno, Niigata-ken, all of Japan, assignors to Kabushiki Kaisha Mizusawa Kagaku Kogyo, Higashi-ku, Osaka, Japan
Filed Nov. 12, 1968, Ser. No. 775,126
Int. Cl. C08h *17/06;* C09c *1/42*
U.S. Cl. 106—288 B 5 Claims
A color former for pressure sensitive recording paper which comprises a member selected from the group consisting of acid-treated dioctahedral montmorillonite clay minerals and mixtures of said minerals with natural dioctahedral montmorillonite clay minerals and a process for producing the same.

3,622,365
PROCESS OF FORMING AN ARSENIC SULFIDE MASK
William I. Lehrer, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Syosset, Long Island, N.Y.
Filed Apr. 18, 1968, Ser. No. 722,281
Int. Cl. B44d *1/52, 1/02*
U.S. Cl. 117—5.5 9 Claims
A process for forming masks employed in the manufacture of devices by photofabrication wherein arsenic sulfide is employed as one of the masking or lifting materials. Arsenic sulfide is soluble in solutions such as ammonia water while other masking or lifing materials which may be employed in such processes are soluble in acids or organic solutions. The arsenic sulfide when melted forms a razor sharp edge that can be superior to that of the original master mask.



3,622,366
ENCAPSULATION METHOD
Loyd W. Piester, New Martinsville, W. Va., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Filed Aug. 6, 1969, Ser. No. 848,097
Int. Cl. C07c *51/50;* B44d *5/12*
U.S. Cl. 117—16 14 Claims
Encapsulation is effected by freezing an aqueous composition of the material to be encapsulated and thereafter contacting frozen particles with a hydratable salt. The frozen particles are sized prior to contact with the hydratable salt. Water provided from the frozen particles and hydratable salt are reacted to form the encapsulating coating of hydrated salt.

3,622,367
CONTACT DEPOSITION OF PLATINUM AND OTHER METALS
Werner O. Haag, Trenton, and Darrell Duayne Whitehurst, Titusville, both of N.J., assignors to Mobil Oil Corporation
Continuation-in-part of application Ser. No. 647,221, June 19, 1967, now abandoned. This application Mar. 24, 1970, Ser. No. 022,362
Int. Cl. C23c *17/02*
U.S. Cl. 117—37 R 23 Claims
A method is provided for the deposition of a metal on a substrate. The substrate has active surfaces and deposition is effected by mixing the substrate with a solution containing an alcohol and a metal pi-complex having at least one ligand in the form of an organic group containing at least one carbon-to-carbon multiple bond. The metal pi-complex decomposes on the active surfaces, thereby depositing the elemental metal on the active surfaces.

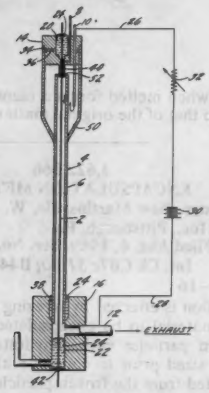
3,622,368
METHOD FOR DEVELOPING ELECTROSTATIC LATENT IMAGES BY UTILIZING COUPLING REACTION
Zenjiro Okuno, and Shuuiti Miyabe, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ricoh, Tokyo, Japan
Filed Aug. 12, 1968, Ser. No. 751,758
Claims priority, application Japan, Aug. 27, 1967, 42/53850
Int. Cl. G03g *13/10, 9/04*
U.S. Cl. 117—37 LE 5 Claims
A method for developing an electrostatic latent image into a visible image by utilizing a coupling reaction, said method comprising immersing a recording or a copying material such as an electrostatic recording material or an electrophotographic copying material carrying an electrostatic latent image in a liquid developer comprising a carrier liquid consisting of a paraffinic hydrocarbon having a high-electric resistance of not lower than $10^9\Omega$. cm and a low-dielectric constant of not greater than 3 and a diazo compound or toner (charged particles) dispersed in said carrier liquid and having its polarity regulated by a polarity regulating agent consisting of a synthetic resin, and thereafter bringing the resulting recording or copying material into contact with a vapor of a coupler adapted to form an azo dye by reaction with said diazo compound or by contact with an aqueous solution containing such a coupler, whereby forming a visible image on the surface of said recording or copying material.

3,622,369

PROCESS FOR FORMING STOICHIOMETRIC SILICON CARBIDE COATINGS AND FILAMENTS

Malcolm Basche, West Hartford, and Urban E. Kuntz, East Hartford, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Feb. 24, 1967, Ser. No. 618,512
Int. Cl. B41m *5/24*
U.S. Cl. 117—46 CG **1 Claim**



A process whereby stoichiometric silicon carbide is chemically deposited on a resistively heated wire from a reactant gas mixture including methyldichlorosilane and hydrogen together with a carbonizing gas such as methane.

3,622,370

METHOD OF AND SOLUTION FOR ACCELERATING ACTIVATION OF PLASTIC SUBSTRATES IN ELECTROLESS METAL PLATING SYSTEM

Eugene D. D'Ottavio, Thomaston, and John J. Grunwald, New Haven, both of Conn., assignors to MacDermid Incorporated, Waterbury, Conn.

Filed Apr. 7, 1969, Ser. No. 814,180
Int. Cl. B44d *1/092;* **C23c** *3/02*
U.S. Cl. 117—47 A **12 Claims**

A method is disclosed for accelerating the activation of a polymeric plastic substrate in a chemical plating process incorporating a preliminary chromic acid etch involving immersing the substrate in an acidic dilute palladium chloride solution following activation, and rejuvenating that accelerating solution with periodic additions of stannous ions sufficient to reduce hexavalent chromium contamination carried over from the preliminary chromic acid etch to a prescribed maximum level without incurring substantial precipitation of palladium in the accelerating solution.

3,622,371

REINFORCEMENT OF STRUCTURES WITH COATINGS OF GLASS FIBERS AND RESIN

Clayton R. Sparks, Pittsburg, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1968, Ser. No. 762,610
Int. Cl. C23f *15/00;* **B44d** *1/34*
U.S. Cl. 117—49 **3 Claims**

Industrial equipment such as tanks, rotating drum granulators and driers, prilling towers and metal storage bins are lined with a glass fiber reinforced resin coating bonded to a surface which has been sandblasted in an overall pattern covering less than one-third of the total area. The combination of pattern sandblasting with high adhesion and ductility of the resin coating reduces sandblasting costs and increases resistance of the structure to vibration and bending stresses.

3,622,372

PROCESS FOR MANUFACTURING BULKY FABRICS

Haruo Ishida, Hirakata-shi, and Kiyoshi Otuka, Hyogo-ken, both of Japan, assignors to Daiwa Chemical Industries Ltd., Osaka-shi, Japan

Filed Dec. 26, 1968, Ser. No. 787,237
Claims priority, application Japan, Dec. 29, 1967, 42/84829
Int. Cl. B44d *1/44*
U.S. Cl. 117—62 **2 Claims**

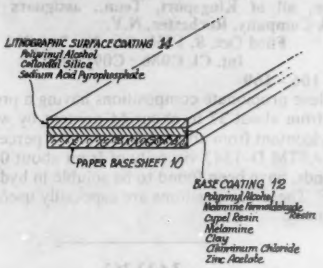
A process for producing a bulky fabric which comprises impregnating a fabric with a bound water-containing metal salt, heating the impregnated fabric to expand said metal salt contained in the fabric, heat-setting the resultant fabric and washing with water the resultant fabric to remove the expanded metal salt; said bound water-containing metal salt being expandable by the emission of its own bound water when heated at a temperature of from 100° C. to a second order transition temperature of the fiber to produce the expanded metal salt soluble in water but not melting or decomposing at a temperature applied in said heat-setting step.

3,622,373

PLANOGRAPHIC PRINTING PLATE

William H. Page, and Henry P. Williams, both of Appleton, Wis., assignors to Appleton Coated Paper Company, Appleton, Wis.

Filed Jan. 21, 1969, Ser. No. 792,485
Int. Cl. B41m *1/06*
U.S. Cl. 117—76 R **20 Claims**



A planographic printing plate formed of a base sheet having the combination of an outer lithographic surface coating and a base or barrier coating immediately underlying the lithographic surface coating in which the surface coating is formulated of polyvinyl alcohol and a filler and containing a phosphate of ammonia or a monovalent metal and in which the underlying base coating is formulated of polyvinyl alcohol, filler and insolubilizing agent in the form of a melamine formaldehyde resin and containing water soluble polyvalent metal salts.

3,622,374

DIFFUSION COATING OF FERROUS ARTICLES

Earl Grant Pike, Rochester, N.Y., assignor to Ritter Praulder Corporation, Rochester, N.Y.

Filed Jan. 14, 1969, Ser. No. 791,158
Int. Cl. C23c *9/02*
U.S. Cl. 117—107.2 P **15 Claims**

Improved diffusion coatings on ferrous articles are achieved using pack diffusion techniques when both a source of silicon and boron are present in the pack composition. The silicon comprises from about 1 percent to about 7 percent by weight of the pack composition, and the boron comprises from about 0.5 percent to about 4 percent by weight of the pack composition. Diffusion coatings having a thickness on the order of 30 mils and greater are obtained.

3,622,375

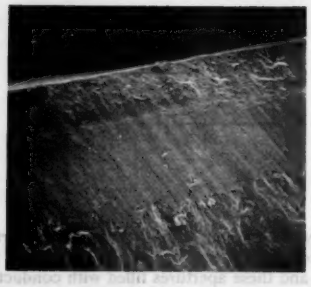
HEAT-SEALABLE ORIENTED POLYPROPYLENE FILM

Markus Siebel, Mainz; Gerhard Buchheister, Wiesbaden-Biebrich, and Horst Gebler, Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Nov. 25, 1968, Ser. No. 778,747
Claims priority, application Germany, Nov. 27, 1967, K 64020
Int. Cl. C09j *7/02*
U.S. Cl. 117—122 H **4 Claims**

This invention relates to an oriented polyolefin film having a heat-sealable layer of a thermoplastic polymer thereon in which the polyolefin film is a mixture of 1 to 15 percent by weight, preferably 2 to 8 percent, of polyethylene, and 85 to 99 percent by weight, preferably 92 to 98 percent, of polypropylene.

3,622,376
TiO_2 IN POLY (ARYLENE SULFIDE) FOR COATING COMPOSITION
Dale O. Tieszen, and James T. Edmonds, Jr., both of Bartlesville, Okla., assignors to Phillips Petroleum Company
Filed Aug. 15, 1968, Ser. No. 752,809
Int. Cl. B44d *1/36*; B32b *15/08*
U.S. Cl. 117—132 B 12 Claims



Normally solid poly(arylene sulfide) containing about 0.5 to about 50 weight percent TiO_2 is applied to a substrate to form a leveled coating without pinholes which is intimately bonded to the substrate. Preferably, the polymer-TiO_2 mixture is applied as a slurry in a carrier liquid such as ethylene glycol, methyl alcohol, water, toluene, and the like, or mixtures thereof, and thereafter heated to form a coating.

3,622,377
PROCESS FOR APPLYING COPPER 8-QUINOLINOLATE TO CELLULOSICS FROM SOLVENT SYSTEM
Charles J. Conner, Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture
Filed Aug. 27, 1969, Ser. No. 853,536
Int. Cl. A61l *13/00*; C09d *5/14*
U.S. Cl. 117—138.5 7 Claims

Copper 8-quinolinolate was dissolved in acetic acid-xylene solvent mixtures and applied at room temperature (25° C.) to cotton fabrics by pad-dry-cure method to produce treated fabrics with excellent fungicidal properties from the in situ deposition of the fungicide in fine particle size for better uniformity and penetration of treatment.

3,622,378
FIBERS WITH ANIONIC-CATIONIC FINISH
Thomas J. Proffitt, Jr., Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Aug. 9, 1968, Ser. No. 751,345
Int. Cl. C09k *3/16*; D06m *3/16*, *3/30*
U.S. Cl. 117—138.8 N 1 Claim

A textile fiber having a finish coating of compatibilized cationic and anionic components comprising from 0.06 percent to about 3 percent by weight of the fiber, said coating comprising a mixture of (a) an organic anionic surfactant containing at least one alkyl or alkenyl group having from eight to 20 carbon atoms; (b) an organic cationic nitrogen containing surfactant having at least one long chain alkyl or alkenyl group of eight to about 20 carbon atoms; and (c) a compatibilizing quantity of an organic amphoteric nitrogen containing surfactant having at least one alkyl or alkenyl group of eight to 20 carbon atoms.

3,622,379
PROCESS FOR CLEANING SHELLS OF MARINE CREATURES
Gottlieb Bernhard Fehmerling, Bridgeton, N.J., assignor to Ocean Research Corporation, Bridgeton, N.J.
Filed Aug. 8, 1968, Ser. No. 751,064
Int. Cl. B44d *5/12*
U.S. Cl. 117—118 11 Claims

A method of treating shells of marine creatures after conventional removal of the marine creatures from the shell to remove all remaining material capable of sustaining microorganism growth and to produce a shiny natural appearing surface comprising: contacting the shells with an aqueous solution of 0.05–2.5 percent by weight of an acid capable of forming a substantially insoluble calcium salt upon the surface of the shell, included in the group of such acids are phosphoric, citric, tartaric, malic, lactic, fluoric, and fumaric, reacting the acid with the calcium in the form present in the natural shell and present on the surface of the shell at a temperature which may be about 175°–212° F. and for a time which may be about 5–300 minutes to form a coating of an insoluble calcium salt on the surface of the shell, rinsing the shell so coated, contacting the coated shells with an aqueous solution of 0.05–2.5 percent by weight of an alkali capable of forming a substantially insoluble calcium salt upon the surface of the coated shell, the alkali being an alkali metal salt of weak acids such as carbonic, phosphoric, tartaric, citric, propionic, malic, formic, and acetic and preferably may be one of the sodium carbonates or sodium phosphates, reacting the alkali with the calcium which forms a part of the coated shell at a temperature which may be about 175°–212° F. for a time between about 5–300 minutes to form an additional coating of an insoluble calcium salt on the shell, rinsing the coated shell and drying.

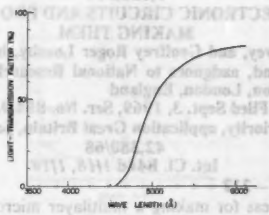
A shell of a marine creature having a glossy smooth surface having removed therefrom all material capable of supporting the microorganism growth and having an insoluble coating of an essentially molecular thickness of at least one insoluble calcium salt such as the calcium salt of phosphoric, citric, tartaric, malic, fumaric, propionic, acetic, or the like acids which also produce an insoluble calcium salt, preferably such coating may be a calcium carbonate or a calcium phosphate or mixtures of both.

3,622,380
COLORING SOLUTION AND USE THEREOF
Fredrick D. Williams, Hancock, Mich., assignor to Universal Oil Products Company, Des Plaines, Ill.
Filed Feb. 18, 1969, Ser. No. 800,294
Int. Cl. B44d *3/48*
U.S. Cl. 117—116 UE 10 Claims

Coloring of porous material by means of an aqueous solution of furfuryl alcohol, a catalyst selected from a compound of iron, nickel, cobalt, copper, zinc and cadmium, and a complexing agent. Specifically, inexpensive elm veneer is colored to resemble the more expensive walnut.

3,622,381
METHOD FOR THE PREPARATION OF A ZINC OXIDE FILM
Masaru Ohnishi; Sumiaki Ibuki, and Michio Yoshizawa, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 22, 1969, Ser. No. 860,440
Claims priority, application Japan, Oct. 25, 1968, 43/77798
Int. Cl. C23c *13/04*
U.S. Cl. 117—201 6 Claims

This invention relates to a method for the preparation of a zinc oxide by oxidizing a zinc selenide film. In detail, this invention relats to a method for the preparation of a zinc oxide

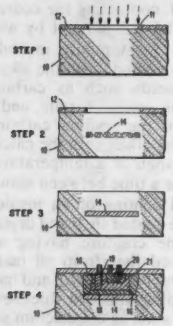


film by vapordepositing zinc selenide as an evaporating source in place of zinc oxide to produce a zinc selenide film and then oxidizing said zinc selenide film.

3,622,382
SEMICONDUCTOR ISOLATION STRUCTURE AND METHOD OF PRODUCING

Karl Brack, Baden, Wurttemberg, Germany; Edward F. Gorey, Beacon, and Guenther H. Schwuttke, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1969, Ser. No. 821,908
Int. Cl. B44d 1/18; H01l 7/14
U.S. Cl. 117—201 **9 Claims**



A monocrystalline semiconductor body provided with a subsurface insulating layer. The layer is produced by bombarding the body with ions such as nitrogen, oxygen and carbon, for a time sufficient to produce a dense layer of embedded ions and at an energy level sufficient to result in ion penetration to the desired subsurface depth. The body is subsequently heated to a temperature sufficient to react the embedded ions with ions of the semiconductor body to produce an insulating layer.

3,622,383
WELDING ELECTRODE

Paul E. Dane, Troy, Ohio, assignor to Hobart Brothers Company, Troy, Ohio

Original application Dec. 8, 1966, Ser. No. 600,276, now Patent No. 3,478,552, Continuation-in-part of application Ser. No. 255,528, Feb. 1, 1963, now abandoned. Divided and this application Aug. 18, 1969, Ser. No. 871,515
Int. Cl. B23k 35/36; C23f 17/00
U.S. Cl. 117—202 **1 Claim**

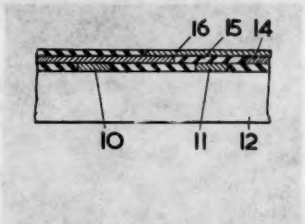
A continuous feeding ferrous-welding electrode is formed by initially coating a mild steel wire with a lime solution, applying a substantially dry-soap-lubricating compound to coat the surface of the wire, drawing the wire to reduce its diameter with a portion of the sodium soap being impregnated within the surface pores of the wire, applying a liquid lubricating solution to the wire, and further drawing the wire to reduce its diameter with a portion of the lubricating solution also being impregnated into the surface pores of the wire to provide a rust and corrosion resistant electrode having improved feeding and welding characteristics.

3,622,384
MICROELECTRONIC CIRCUITS AND PROCESSES FOR MAKING THEM

Norman Davey, and Geoffrey Roger Loasby, both of Newbury, England, assignors to National Research Development Corporation, London, England

Filed Sept. 3, 1969, Ser. No. 854,934
Claims priority, application Great Britain, Sept. 5, 1968, 42,380/68
Int. Cl. B44d 1/18, 1/14
U.S. Cl. 117—212 **12 Claims**

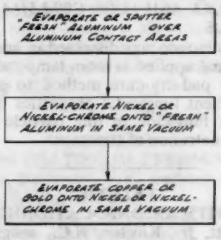
In a process for making a multilayer microelectronic circuit by successive screen-printing operations, at least one layer of the circuit is formed by screen printing a first conductor pattern of conductor material and a first insulating pattern of insulating material, the insulating pattern being substantially complementary to the conductor pattern so that inked areas of the insulating pattern adjoin but do not overlap inked areas of the conductor pattern and together the conductor pattern and the insulator pattern present a substantially flat surface for receiving further screen-printed patterns to form the microelectronic circuit. A second insulating layer may be formed with a pattern of apertures where through-connections to the first conductor pattern are required, and these apertures filled with conductive material and a second conductor pattern printed over the second insulating layer in a single operation. An aperture may be provided in every pattern of every layer to form a recess in which a semiconductor chip can be mounted.



3,622,385
METHOD OF PROVIDING FLIP-CHIP DEVICES WITH SOLDERABLE CONNECTIONS

Fritz W. Stork, Kappmannsgrund, Germany, assignor to Hughes Aircraft Company, Culver City, Calif.

Filed July 19, 1968, Ser. No. 746,190
Int. Cl. B44d 1/14, 1/18
U.S. Cl. 117—217 **3 Claims**


EVAPORATE OR SPUTTER "FRESH" ALUMINUM OVER ALUMINUM CONTACT AREAS
EVAPORATE NICKEL OR NICKEL-CHROME ONTO "FRESH" ALUMINUM IN SAME VACUUM
EVAPORATE COPPER OR GOLD ONTO NICKEL OR NICKEL-CHROME IN SAME VACUUM

Method of providing flip-chip devices having aluminum connection means with solderable connections by applying "fresh" aluminum on the existing aluminum means and then in the same vacuum depositing nickel or nickel-chrome on the "fresh" aluminum and a solderable metal (copper or gold) onto the nickel (or nickel-chrome).

3,622,386
METHOD OF MAKING MAGNETIC RECORDING DISCS

Robert E. Larsen, Santa Clara, Calif., assignor to Memorex Corporation, Santa Clara, Calif.

Filed Aug. 8, 1968, Ser. No. 751,052
Int. Cl. H01f 10/02
U.S. Cl. 117—235 **6 Claims**

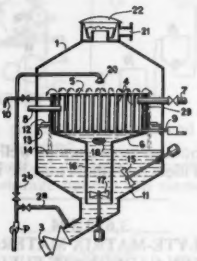
A method of making magnetic recording discs including adding to a fluid mixture of magnetic particles and binder resin between 1 and 10 weight percent of abrasive particles which have a hardness of at least seven and a particle size between 50 and 100 percent of the thickness of the magnetic recording layer to be made with the mixture. Preferably, the method is carried out in two stages with the magnetic particles and at least part of the resin binder extensively milled to homogeniety in a first step with the abrasive particles mixed into the mixture in a second mixing step.

3,622,387

EVAPORATOR OR COOKING APPARATUS

Albert Rene Grandadam, Saint-Maur, France, assignor to S.I.C.E.R. Societe Industrielle & Commerciale D'Etudes & De Realisations, Atfortville, France

Filed June 26, 1969, Ser. No. 836,846
Claims priority, application France, June 26, 1968, 156,613
Int. Cl. C13f *1/02*; C13g *1/02*; B01d *9/00*
U.S. Cl. 127—16 25 Claims



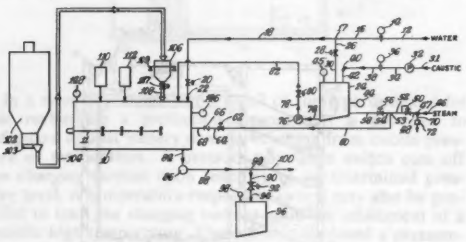
Evaporator for a product such as a sugar syrup of the type having an inner heating nest. The nest is vertically spaced from the base of the evaporator vessel and is contained in a compartment which communicates with the product inlet and also communicates, by way of a product overflow means, with a lower zone of the vessel. Means put the lower part of the compartment in communication with said lower zone. A device causes the product to pass from said lower zone through the compartment.

3,622,388

APPARATUS FOR THE PREPARATION OF A STARCH CORRUGATING ADHESIVE

Robert Carl Larson, Pilot Mount, Iowa, assignor to CPC International Inc.

Continuation-in-part of 529,692, Feb. 24, 1966, now abandoned. This application July 24, 1968, Ser. No. 747,145
Int. Cl. C13l *1/08*
U.S. Cl. 127—23 9 Claims



Apparatus for preparing a single starch component corrugating adhesive. An aqueous slurry of starch is treated with caustic under controlled temperature conditions, so as to produce a partially swollen starch corrugating adhesive mixture. Swelling of the starch granules is terminated at a preselected viscosity by the addition of a material such as alum, boric acid, ice, other acid material or the like.

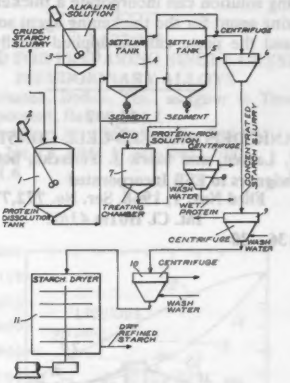
3,622,389

PROCESSING OF SAPONARIA VACCARIA SEED

Donald L. Brelsford, and Kenneth J. Goering, both of Bozeman, Mont., assignors to Montana Agricultural Research Corporation, Bozeman, Mont.

Filed May 20, 1970, Ser. No. 38,993
Int. Cl. C13l *1/02*
U.S. Cl. 127—67 7 Claims

Saponaria vaccaria seed is dehulled and degermed to form a crude starch. The crude starch from this seed, in the form of an aqueous slurry, is then treated to dissolve the protein matrix, thereby releasing insoluble pigment impurities. The pigment impurities separate from the resulting solution by



gravity (i.e., flotation and sedimentation). Suspended starch granules are then separated from the protein-containing solution and thereafter refined.

3,622,390

PROCESS FOR IMPROVING CAPACITORS

Ronald W. Hevey, Piscataway, N.J., and Elbert Erskine Hopkins, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 18, 1969, Ser. No. 800,286
Int. Cl. B08b *3/00*
U.S. Cl. 134—2 3 Claims

The treatment of electrode foils with aerated water at a temperature of about 10° to 125° C. for several minutes to an hour, followed by drying, to decrease the failure rate of wound capacitors under voltage stress.

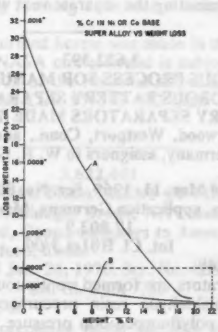
3,622,391

PROCESS OF STRIPPING ALUMINIDE COATING FROM COBALT AND NICKEL BASE ALLOYS

Alfonso L. Baldi, Drexel Hill, Pa., assignor to Alloy Surfaces Company, Wilmington, Del.

Filed Apr. 4, 1969, Ser. No. 813,672. The portion of the term of the patent subsequent to July 28, 1986, has been disclaimed.
Int. Cl. C23g *1/12*
U.S. Cl. 134—3 10 Claims

An improved stripping process for removing as produced aluminide coatings and exposed aluminide coatings from



cobalt base and nickel base superalloys, using ½ to 5 percent of hydrofluoric acid or an acid fluoride having at least one

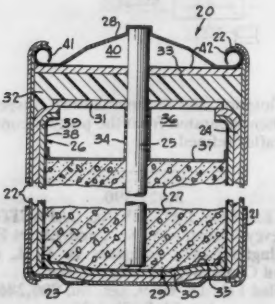
mole of hydrofluoric acid, 3 to 20 percent of nitric acid and water, permissibly including a low foaming or nonfoaming wetting agent. The temperature of treatment is 50° to 115° F., preferably 60° to 100° F. for a time of at least 15 minutes. The treating solution can incorporate a thickening agent and a solubilizing agent for the thickening agent so as to produce a paste, and the paste can be applied locally for selective stripping.

3,622,392

ORGANIC DEPOLARIZED CELL CONSTRUCTION

Duane M. Larsen, and Mark J. Terlecke, both of Madison, Wis., assignors to ESB Incorporated

Filed Nov. 1, 1968, Ser. No. 772,774
Int. Cl. H01m *43/02*
U.S. Cl. 136—30 **7 Claims**



A cell having an outward appearance similar to a conventional primary LeClanche cell but having certain internal structural features that render the cell rechargeable, including an organic depolarizer, insulating means about the portion of the carbon rod located in the cell airspace, laminated separator means about substantially the entire inner wall of the negative electrode can, laminated insulating means along the interior bottom of the negative electrode can, and a vent washer located on top of the cell sealant enabling gases formed in the cell interior to escape to the atmosphere. A one-piece plastic closure has also been developed which eliminates the need for the cell sealant and serves as an insulator about the portion of the carbon rod locatd in the airspace as well as incorporating means to vent gases from the cell, thereby eliminating the separate vent washer.

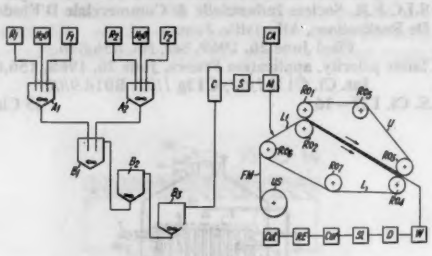
3,622,393

CONTINUOUS PROCESS FOR MANUFACTURING MICROPOROUS BATTERY SEPARATORS AND BATTERY SEPARATORS MADE THEREBY

Robert E. Sherwood, Westport, Conn., and Erhard Decker, Hamburg, Germany, assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Mar. 11, 1969, Ser. No. 806,265
Claims priority, application Germany, Mar. 12, 1968, P 16 17 803.9
Int. Cl. H01m *3/00*
U.S. Cl. 136—148 **4 Claims**

Battery separators are formed continuously by placing an aqueous phenolaldehyde resin precursor solution onto a sloped steel or polyfluorocarbon pressure belt which moves upward to a point where it meets another superposed pressure belt of the same material, heating the solution, as it passes through the space between the synchronously moving belts, at a temperature sufficient to cause gellation without loss of water, drying the resulting water-containing sheet after it leaves the confined belt area, curing, and cutting the dry sheet to desired specifications. The resin precursor solu-



tion preferably contains resorcinol as well as a thermoplastic resin dispersion. Fillers and fibers may be incorporated.

3,622,394

AN ELECTROLYTE-MATRIX MATERIAL FOR USE IN MOLTEN CARBONATE FUEL CELLS

Mohendra S. Bawa; Henry R. Kroeger, and James K. Trulit, all of Dallas, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 23, 1966, Ser. No. 596,449
Int. Cl. H01m *9/00*
U.S. Cl. 136—153 **4 Claims**

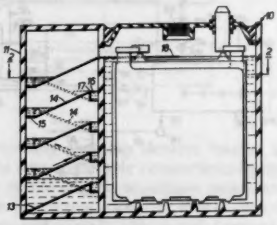
This invention relates to fuel cells. More particularly it relates to an electrolyte-matrix material and the process of making the same for use in high-temperature molten carbonate fuel cells.

3,622,395

ELECTRIC STORAGE BATTERY TOPPING UP MEANS

Charles James Bushrod, Manchester; Patrick Ewart McKellen, Manchester, and Eric W. E. Micklethwait, London, all of England, assignors to Electric Power Storage Limited, Clifton Junction, Swinton, Manchester, England

Filed Oct. 7, 1969, Ser. No. 864,393
Claims priority, application Great Britain, Oct. 10, 1968, 48,132/68
Int. Cl. H01m *7/00*
U.S. Cl. 136—162 **7 Claims**



A topping up device for an electric storage battery comprises a series of ramps, or an inclined pipe, for automatically topping up the cells by raising liquid from a reservoir alongside the cells when the battery is accelerated.

3,622,396

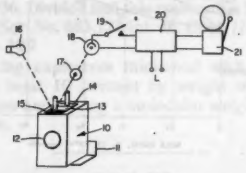
METHOD FOR DETECTING MISPOSITIONED PARTS

Angelo Fernandez, Bridgeport, Conn., and Robert G. McKelvey, Willowick, Ohio, assignors to ESB Incorporated

Filed Feb. 19, 1970, Ser. No. 12,703
Int. Cl. H01m *39/00*
U.S. Cl. 136—176 **12 Claims**

A method for detecting mispositioned parts in assemblies of parts wherein the orientation of one of the parts of an assembly of parts is to be controlled relative to at least one other part in the assembly of parts. The method includes applying a light-reflective-marking pigment to a part whose orientation is to be controlled. The marking pigment is ap-

plied to the part at a time when its orientation is known and prior to its assembly with at least one other part of the assembly of parts. An examination of assembled parts is made by a light-sensing device, and by the response of the light-sensing device to the presence or absence of light reflected



from the marking pigment, mispositioned parts in the assembly of parts are detected.

In particular, the method disclosed is applicable to checking the orientation of storage battery cell elements in their containers.

3,622,397

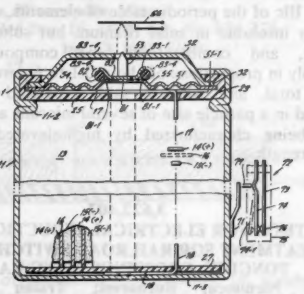
FAST RECHARGEABLE SEALED NICKEL-CADMIUM BATTERY CELLS COMBINED WITH EXCESS PRESSURE AND TEMPERATURE CONTROLS

Louis Belove, Ardsley, N.Y., assignor to Sonotone Corporation, Elmsford, N.Y.

Continuation-in-part of application Ser. No. 712,525, Mar. 12, 1968, now abandoned. This application Aug. 7, 1968, Ser. No. 750,796

Int. Cl. H01m *1/06, 31/04*

U.S. Cl. 136—178 **19 Claims**



In a normally sealed battery cell of the type designed for fast recharging a protection arrangement is provided to safeguard against battery damage resulting from excess pressure or temperature. A pressure-responsive switch cuts off the charging current upon reaching of predetermined pressure level. A temperature-responsive switch may also be provided to limit the charging current upon the attainment of a specific high temperature. There is also disclosed a pressure-responsive vent to permit the release of excess pressure built up beyond a maximum danger level. The vent may be of the resealable type to reseal the battery after the release of the extremely high pressure built up. The vent being located on the same wall section as the pressure-responsive switching means. In another example, the pressure release vent is located at a casing portion other than the deflectable wall section.

3,622,398

SEALED TYPE STORAGE BATTERY

Satoshi Sekido, Kadoma-shi; Minoru Yamashita, Hirakata-shi, and Masao Matsumoto, Neyagawa-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza Kadoma, Kadoma-shi, Osaka, Japan

Filed Aug. 1, 1969, Ser. No. 846,706

Claims priority, application Japan, Oct. 4, 1968, 43/72660

Int. Cl. H01m *1/08*

U.S. Cl. 136—179 **5 Claims**

A new type of enclosed storage battery which comprises a (gas phase) catalyst capable of combining oxygen and hydrogen into water, an oxygen supply unit for automatically supplementing oxygen shortage and a solid electrolyte, and which is cheap in price, easy to handle, large in capacity and long in service life.

3,622,399

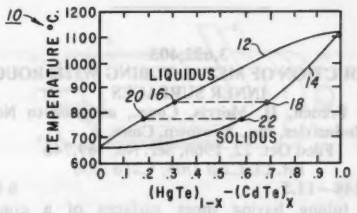
METHOD FOR PREPARING SINGLE CRYSTAL PSEUDOBINARY ALLOYS

Rowland E. Johnson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 31, 1968, Ser. No. 788,171

Int. Cl. B01j *17/00;* **H01l** *7/00*

U.S. Cl. 148—1.6 **11 Claims**



A method for producing homogeneous single crystal ingots of pseudobinary alloys having high-crystal perfection by rapidly quenching a homogeneous liquid mixture of the desired constituents to produce a homogeneous polycrystalline ingot, then very slowly passing the polycrystalline ingot through a thermal gradient unitl the ingot is at a maximum temperature just below the solidus termperature of the alloy, thus causing the grain boundaries to migrate through the ingot as a result of directional solid-state recrystallization, then slowly coolng the ingot.

3,622,400

THERMAL-COATED BOOMS FOR SPACECRAFT

Michael Lauriente, Clarksville, and Ernst R. Pemsel, Jr., Ellicott City, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 3, 1968, Ser. No. 742,191

Int. Cl. C23f *1/02;* **E04h** *12/18*

U.S. Cl. 148—6.14 **13 Claims**

A spacecraft boom having improved resistance to thermally induced bending forces resulting from solar radiation is disclosed, comprising a beryllium containing copper base alloy having a highly absorbent coating disposed on the interior and a highly reflective coating on the exterior. A process is disclosed for manufacturing such booms including a coating, milling, forming and heat treating to obtain the finished product.

The invention described herein was made in the performance of work under a NASA contract and is subject to the provisions of Section 305 of the National Aeronautics and Space Act of 1958 Public Law 85–568 (72 Stat. 435; 42 U.S.C. 2457).

3,622,401

CHEMICAL TREATMENT OF METAL

John Edmund McCullough, Bronx, N.Y., and Francis Clyde Rauch, Stamford, Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 20, 1970, Ser. No. 4,398

Int. Cl. C23t *7/08*

U.S. Cl. 148—6.15 R **10 Claims**

A method for preparing metal surfaces for receipt of a coating such as a paint or adhesive (whereby increased coating adhesion and corrosion resistance is achieved) and the treated metal per se, are disclosed. The method comprises contacting the metal surface with various hydroxyalkyl phosphine oxide derivatives.

3,622,402

EROSION-CORROSION RESISTANT COATING

Sanford Baranow, Woodbridge, and Richard B. Andrews, Milford, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Feb. 4, 1969, Ser. No. 796,566
Int. Cl. C23c *11/04, 9/04*
U.S. Cl. 148—6.35 4 Claims

A process for improving the erosion resistance and corrosion resistance of steel articles which comprises boronizing said articles and thereafter coating said boronized articles with chromium under conditions such that the chromium combines with the boron to produce an article bearing a coating containing a boride rich in chromium on the surface of said article.

3,622,403

PRODUCTION OF METAL TUBING WITH ROUGH INNER SURFACES

Fred W. French, II, Morris, Conn., assignor to Noranda Metal Industries, Inc., Newtown, Conn.

Filed Oct. 22, 1968, Ser. No. 769,746
Int. Cl. C22f *1/08;* C21d *9/08*
U.S. Cl. 148—11.5 6 Claims

Metal tubing having inner surfaces of a controlled roughness of a sand-grained type consistency are characterized by (1) the same or only a slightly higher resistance to flow, (2) a higher heat-transfer coefficient and (3) a higher energy ratio (which is defined as the ratio of thermal energy transmitted to mechanical energy expended) when compared to smooth tubing having the same internal diameter. To produce metal tubing having this controlled roughness, the tubing is overannealed to produce excessive grain growth of the metal and is then radially inwardly deformed to force the grains adjacent the inner surface into alignment in a generally inwardly direction thereby resulting in the desired roughening of the inner surfaces of the tubing. The degree of roughness is determined by the extent of overannealing and inward deformation.

3,622,404

METHOD AND APPARATUS FOR STRESS RELIEVING A WORKPIECE BY VIBRATION

Leonard E. Thompson, 961 N. W. Dale Ave., Portland, Oreg.

Filed Feb. 19, 1969, Ser. No. 800,666
Int. Cl. C21d *1/04*
U.S. Cl. 148—12.9 8 Claims

A method of stress relieving a workpiece by vibrating the workpiece in the frequency range of each resonant peak corresponding to each portion of the workpiece to be stress relieved and maintaining the vibration in the frequency range of each selected resonant peak while the amplitude of the peak increases, the power necessary to produce the peak decreases, and the frequency range decreases until the power necessary to produce the amplitude has substantially stabilized. An apparatus for carrying out the method including a vibrator, an accelerometer and an electric control and monitoring circuit comprising means for indicating the frequency and the amplitude of the vibration impressed on the workpiece and the power needed to produce the amplitude.

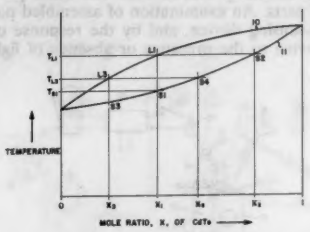
3,622,405

METHOD FOR REDUCING COMPOSITIONAL GRADIENTS IN $Hg_{1-x}Cd_xTe$

Joseph L. Schmit, Hopkins, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed June 22, 1970, Ser. No. 048,361
Int. Cl. C22f *1/16*
U.S. Cl. 148—13 2 Claims

Compositional gradients in a body of $Hg_{1-x}Cd_xTe$ can be removed by annealing the body at a temperature which is greater than the solidus temperature and less than the liquidus temperature for the average composition of the body.



3,622,406

DISPERSOID TITANIUM AND TITANIUM-BASE ALLOYS

Milton B. Vordahl, Henderson, Nev., assignor to Titanium Metals Corporation of America, New York, N.Y.
and a continuation-in-part of 558,589, June 20, 1966, now Patent No. 3,379,522. This application Mar. 5, 1968, Ser. No. 710,631

Int. Cl. C22c *15/00, 31/04*
U.S. Cl. 148—32 11 Claims

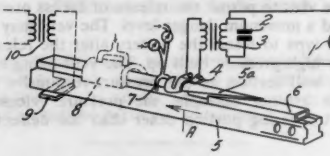
As a new article of manufacture a base metal of the group titanium and titanium base alloys containing a dispersoid of the group consisting of thorium, boron, rare earth elements having an atomic number of 57–71, and elements of groups IIIb and IIIc of the periodic table of elements, which are substantially insoluble in solid titanium but soluble in molten titanium, and combinations and compounds thereof, preferably in proportions of about 0.1 to 6 percent by weight of the total, and wherein said dispersoid is preferably dispersed in a particle size of several microns and under, said article being characterized by high-elevated temperature creep strength.

3,622,407

METHOD FOR ELECTRICAL INDUCTION, HEAT TREATMENT FOR RAILROAD SWITCHES (RAIL TONGUES, CROSSINGS, WING RAILS)

Grigore Niculescu, Bucharest; Traian Ghimbasean, Bucharest; Eugen Dumitrescu, Bucharest, and Nicolae Ionescu, Buzau, all of Romania, assignors to Institutul de Cercetari Tehnologice Pentru Constructii de Masini, Bucharest, Romania

Filed June 28, 1968, Ser. No. 741,166
Claims priority, application Romania, June 29, 1967, 54158
Int. Cl. C21d *1/00*
U.S. Cl. 148—146 6 Claims



A railroad-switch component of irregular cross section is moved through an induction-heating station along with a nonmagnetic conductive body. This body fits the nonuniform switch component complementarily to give the two an overall uniform cross section at least over the significant portion of the rail or tongue, so that they can be moved at a uniform speed and heated with a uniform flux to surface harden the top of the switch component for example. Subsequently the two are quenched and the bottom of the rail component is heated.

3,622,408

WATER-BEARING EXPLOSIVES THICKENED WITH A PARTIALLY HYDROLYZED ACRYLAMIDE POLYMER

William M. Lyerly, Hagerstown, Md., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Original application Aug. 18, 1966, Ser. No. 573,206, Pat. No. 3,355,336. Divided and this application Nov. 15, 1967, Ser. No. 683,127 Int. Cl. C06b *1/00*

U.S. Cl. 149—109 1 Claim

Water-bearing explosives thickened with polyacrylamide containing at least 10 percent by weight of carboxylate (-COO-) moieties and having a molecular weight of about from 3 to 15 million.

3,622,409

METHOD OF PRODUCING MAGNETIC ALLOYS AND NOVEL PRODUCT

Thomas H. McCunn, Lower Burrell, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed June 2, 1969, Ser. No. 829,783

Int. Cl. H01f *1/14, 1/16;* C22c *19/00*

U.S. Cl. 148—122 4 Claims

Described herein is a method of processing an alloy of iron, cobalt, and at least one of vanadium, chromium, molybdenum, and tungsten to develop a novel product having an improved combination of magnetic properties and strength. The method involves continuously annealing the alloy so as to produce an average grain size of ASTM 012 or finer.

3,622,410

METHOD OF FABRICATING FILM RESISTORS

Willis J. Carlson, Fridley, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Dec. 18, 1969, Ser. No. 886,228

Int. Cl. H01l *7/00*

U.S. Cl. 156—17 5 Claims

A method of fabricating film resistors on a substrate in order to avoid the unsatisfactory result of unwanted chemical etching of the film resistor material. A film of nichrome is sputtered over a substrate. Nitrogen is then sputtered over the layer of nichrome, resulting in a film of nickel nitride over the nitride film forming three layers of film, the first being a nichrome film applied directly to the substrate, the next being a nickel nitride film and finally a nickel film. The nickel film is then selectively etched by a conventional etching process, in order to form ohmic contacts and calibrate the precise resistance desired as a result of the combination of nickel and nichrome. The assembly is heated to the necessary temperature in a prescribed atmosphere to decompose the nickel nitride, leaving only nickel and nichrome on the substrate.

3,622,411

METHOD OF MANUFACTURING AN ELONGATED COMPOSITE DIFFRACTION GRATING

Kiyozo Koshlishi, No. 1758, Aza-Wada Tama-Machi, Minami-Tama-Gun, Tokyo, Japan

Filed Aug. 22, 1967, Ser. No. 662,433

Claims priority, application Japan, Aug. 26, 1966, 41/55796

Int. Cl. G01b *11/00*

U.S. Cl. 156—64 8 Claims

An economical method of manufacturing an elongated composite diffraction grating in mass production with the aid of a combination of a plurality of steps comprises replicating from a master diffraction grating a number of replica diffraction gratings, clamping the replica diffraction gratings in a jig with one of them being made stationary while the other is made adjustable so as to bring it into coincidence with the stationary one in direction and phase, and mechanically securing or cementing the gratings together.

3,622,412

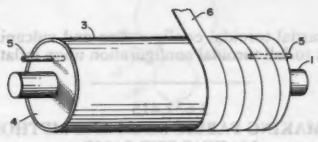
METHOD OF COVERING VOLUME-COMPRESSIBLE ARTICLES

William C. Ross, Winchester; Nathaniel M. Edmands, Jr., Lynn, and Frederick E. Heinemann, Canton, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Nov. 4, 1969, Ser. No. 873,788

Int. Cl. B32b *31/26*

U.S. Cl. 156—87 6 Claims



Volume-compressible products such as printing, coating, and impression rolls are made by enclosing a porous volume-compressible layer formed on a rigid core with an impermeable layer of heat-flowable resilient polymeric material. The assembly is wrapped with a nonshrinking tape, or may be placed in a mold. Vents plugged with a substance having a predetermined melting point are inserted in the porous layer, and lead to the atmosphere. Pressure to cause the polymeric coating layer to flow and consolidate is developed by heating the assembly. Cure, if necessary, is effected by elevating the temperature. At the higher temperature, the plugs melt and open the vent passages, thus avoiding collapse and wrinkling when the product cools.

3,622,413

METHOD OF MAKING PREFORMED MATS

Silvio Tasca, Lungo Po Macchiavelli 29, Turin, Italy

Filed Dec. 11, 1968, Ser. No. 783,132

Claims priority, application Italy, Dec. 11, 1967, 54063

Int. Cl. B32b *31/14*

U.S. Cl. 156—93 7 Claims

Preformed mats such as automobile floor mats are produced from a bat of loose fibers through which stitches are sewn along a plurality of courses, to hold the fibers together or to tack them to a backing such as a sheet of thermoplastic material, and so as to leave the bat readily expansible in all directions. The bat is then impregnated with a thermosetting resin and molded to shape at the polymerization temperature of the resin. The resulting mat tends to retain its molded shape.

3,622,414

METHOD OF MAKING A PNEUMATIC TIRE

John F. Heimovics, Jr., Stow, and James Sidles, West Richfield, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

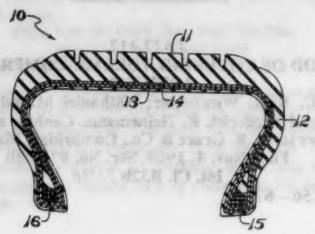
Original application Dec. 26, 1967, Ser. No. 693,510, now Patent No. 3,545,012. Divided and this application Mar. 9, 1970, Ser. No. 17,384

Int. Cl. B29h *17/20, 17/28*

U.S. Cl. 156—128 R 5 Claims

The method of making a pneumatic tire with reinforcing cords of stretchable material embedded therein, the cords having initially a low-tensile modulus and upon elongation a predetermined and limited amount abruptly changing to a substantially higher tensile modulus. The uncured carcass is fabricated in flat band form on a building drum with a drum

set less than that required for a conventional tire of like final size. The uncured carcass is then removed from the drum,



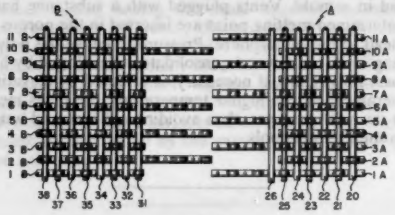
shaped to partial toroidal configuration and vulcanized. The tire expands to full toroidal configuration upon inflation.

3,622,415

PAPERMAKING FABRIC SEAM AND METHOD OF MAKING THE SAME

Laurence D. Kunsman, Willoughby, Ohio, assignor to The Lindsay Wire Weaving Company, Cleveland, Ohio

Filed Dec. 22, 1967, Ser. No. 692,798
Int. Cl. D04h *3/12*
U.S. Cl. 156—158 **24 Claims**



A Fourdrinier papermaking belt having porous fabric comprising warp and weft strands and having a porous seam of polymeric filaments and a method of making such seam by interconnecting the end portions of the fabric together to form an endless belt. The method including cutting the warps back into complementary patterns and removing the weft strands from the cut area. Laying a first polymeric replacement weft strand over certain of the exposed warp pickets and moving the adjacent end portions together so that other of the warp pickets ride over the first replacement strand and into abutment with the corresponding cut warps of the other end portion. A plurality of other polymeric replacement weft strands are then woven across respective of the exposed warp pickets to complete the seam area, whereafter, the warp joints are bonded together and the warp and weft strands are bonded to each other at their areas of contact to provide the porous seam.

3,622,416

METHOD OF MAKING REINFORCED VINYL FABRIC

Jack P. Brandt, Stoughton, Wis., assignor to Uniroyal, Inc., New York, N.Y.

Filed Mar. 21, 1969, Ser. No. 809,132
Int. Cl. B32b *5/00*
U.S. Cl. 156—178 **17 Claims**

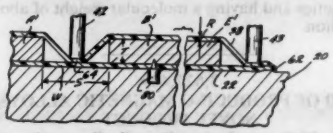
A reinforced vinyl resin fabric is made using a reinforcing material, such as nylon, which ordinarily exhibits a high degree of thermal contraction at normal vinyl plastisol fusion temperatures, without creating discontinutities in the vinyl resin coating, by first casting a layer of vinyl plastisol on a support web, applying the reinforcing material and raising the temperature of the plastisol to the gelation stage and teen removing the support web prior to raising the temperature of the coated fabric to the fusion temperature.

3,622,417

METHOD OF FORMING MULTI-PLY HINGED ARTICLE

George G. Gray, Jr., 820 Green St., 6A Willow Court, Iselin, N.J.

Filed July 23, 1969, Ser. No. 843,995
Int. Cl. B32b *31/06*
U.S. Cl. 156—213 **6 Claims**



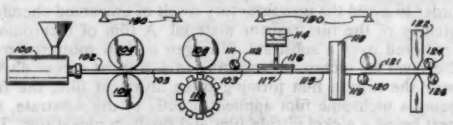
A method for manufacturing toy cases and other articles with hinged sections, wherein the articles are constructed of a pair of vinyl layers with a layer of stiff cardboard between them. The method includes placing a female die, or locating plate, on a first vinyl sheet, placing a sheet of cardboard on the locating plate, the cardboard being pre-slit to facilitate punching, and moving a male die through the cardboard sheet and locating plate to punch out areas of the cardboard and move them against the vinyl sheet. Thereafter, a second vinyl sheet is placed on top of the pieces of cardboard which have been punched out, and the opposite layers of vinyl are joined together at regions between the pieces of cardboard.

3,622,418

DRAWER MANUFACTURING METHOD

William Horace Black, 3060 Pharr Court N.W., Atlanta, Ga., and Clarence Edward Pittman, 2479 Peachtree Road N.E., Atlanta, Ga.

Original application Dec. 27, 1966, Ser. No. 604,717, now Patent No. 3,462,208, Continuation of application Ser. No. 834,352, June 18, 1969, now abandoned. Divided and this application June 16, 1970, Ser. No. 48,899
Int. Cl. B29c *17/02;* **B29d** *15/00*
U.S. Cl. 156—217 **5 Claims**



Method of producing drawer forms by extruding a sheet of plastic, the edges of which are notches at spaced intervals with substantially rectangular open sided opposed pairs of notches; the sheet is then successively cut transversely between each pair of notches to provide drawer blanks, the edge portions of which are bent from the plane of the bottom, and abutting side and back edges are welded together. In the method, calendering rollers produced reinforcing ribs on one of the plastic surfaces and a wood grain effect on the other.

3,622,419

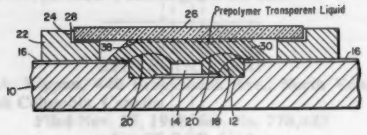
METHOD OF PACKAGING AN OPTOELECTRICAL DEVICE

Arnold Tempe London, and Karel J. Brouwers, both of Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 8, 1969, Ser. No. 864,785
Int. Cl. H05k *5/06*
U.S. Cl. 156—242 **4 Claims**

In packaging an optoelectrical device, liquid silicone which can be cured to become a transparent flexible polymer sub-

stance having an index of refraction close to that of a solid transparent cover plate is disposed between the light sensitive



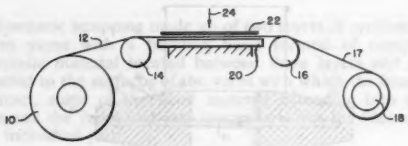
side of the device and a surface of the cover plate and in good optical coupling therewith.

3,622,420

METHOD OF MAKING A MAGNETIC RECORDING TAPE WITH LAMINATED LEADER

Austin A. Knox, White Plains, N.Y., assignor to Dict-O-Tape Inc., Brooklyn, N.Y.

Filed May 1, 1968, Ser. No. 725,835
Int. Cl. B32b *31/00*
U.S. Cl. 156—271 **7 Claims**



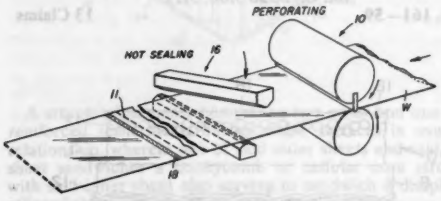
A method for producing an improved magnetic recording tape (17, FIG. 1) comprising bonding the entire length of a reinforcing tape 22 to a portion of magnetic tape which is to serve as an end portion of the finished tape to thereby provide a reinforced laminated leader.

3,622,421

METHOD FOR FORMING BAGS FROM THERMOPLASTIC TUBING

Roy B. Cook, Newark, Ohio, assignor to Continental Can Company, Inc., New York, N.Y.

Original application Feb. 27, 1967, Ser. No. 618,703, now Patent No. 3,506,523. Divided and this application Nov. 7, 1969, Ser. No. 874,825
Int. Cl. B32b *31/20*
U.S. Cl. 156—290 **6 Claims**



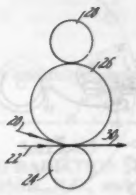
A bag-fabricating method and a machine for carrying out the same wherein a plastic tubing in flattened continuous web form is supported on a rotatably mounted drum having vacuum means for gripping the web at points spaced circumferentially about the drum, with transverse sealing members and associated members for shifting a portion of the web between the gripping points so as to provide web areas which are free of tension and in which transverse seals are formed with the sealed areas being subsequently held away from the sealing members while it is advanced through a cooling zone after which the sealed web is delivered from the drum.

3,622,422

PROCESS FOR PRODUCING A NONWOVEN FABRIC

Nicholas S. Newman, West Newton, Mass., assignor to The Kendall Company, Boston, Mass.

Continuation-in-part of application Ser. No. 563,238, July 6, 1966, now abandoned, Continuation-in-part of application Ser. No. 530,734, Feb. 28, 1966, now abandoned, Continuation-in-part of application Ser. No. 514,079, Dec. 15, 1965, now abandoned. This application Oct. 2, 1969, Ser. No. 863,273
Int. Cl. C09j *5/00*
U.S. Cl. 156—306 **1 Claim**



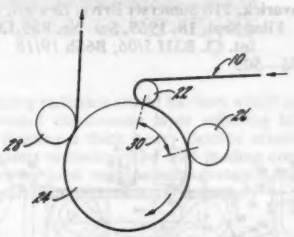
A major portion by weight of an unbonded fibrous fleece is combined by heat and pressure with a minor portion of a thermoplastic film to form soft, conformable, air-permeable nonwoven fabrics suitable for use as disposable clothing.

3,622,423

PROCESS OF FORMING A REINFORCED NONWOVEN LAMINATE CONTAINING PLASTISOL ADHESIVE

Thomas A. Hadley, Hendersonville, N.C., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Apr. 22, 1970, Ser. No. 30,842
Int. Cl. C09j *5/06*
U.S. Cl. 156—309 **10 Claims**



A process is described for forming a nonwoven laminate having outer plies of cellulose wadding and an inner reinforcing means having disposed on either side thereof a plastisol adhesive. Plastisol penetration into the cellulose wadding webs as well as plastisol fusion is accomplished by passing the laminate over the peripheral surface of a drum heated to a temperature above the fusion point of the plastisol adhesive, and subjecting the laminate to calendering while it is in contact with the heated drum.

3,622,424

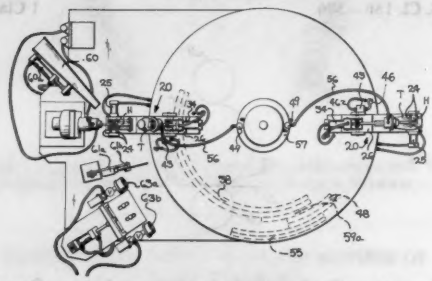
MACHINE FOR UNITING GLASS PARTS

John R. Mechel, Maumee, Ohio, assignor to Owens-Illinois, Inc.

Filed Aug. 29, 1969, Ser. No. 854,156
Int. Cl. B32b *31/20*; **C09j** *5/06*
U.S. Cl. 156—499 **10 Claims**

This is a substantially completely automatic rotary machine comprising a horizontal rotatable index table carrying an annular series of identical heads, each including a chuck or holder for a glass tumbler and a chuck or holder for a handle, medallion or the like which is to be epoxy-resin welded to the tumbler. The tumblers are held on the chucks by vacuum, while the handles or medallions are positively supported nearby and, incident to indexing of the table, are

brought in succession to a station at which a measured amount (a drop or two) of epoxy-resin is deposited upon a selected area, or so-called "button" of such handles, preparatory to bringing the tumblers in a preheated condition into firm contact with the resin-coated area of preheated handles, or medallions. Following such initial interengagement of these parts they are so held firmly together during succeeding



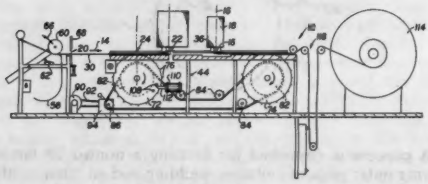
indexing of the table so as to effect at least initial "curing." Detecting elements are so positioned in advance of the epoxy-resin dispenser that they must be actuated by both a tumbler and a handle in the same head in order to effect delivery of resin to a selected part of the handle. Thus, resin delivery is effected only if a handle is about to arrive at the dispensing station accompanied by a companion tumbler to which is desired to weld the handle.

3,622,425

FILM STRIP HANDLING AND SPLICING APPARATUS

Michael Savarick, 218 Somerset Drive, Hewlett, N.Y.

Filed Sept. 18, 1969, Ser. No. 859,138
Int. Cl. B31f *5/06;* **B65h** *19/18*
U.S. Cl. 156—505 **4 Claims**



An apparatus for splicing smaller film strips end-to-end so as to produce a single, elongated strip which is more convenient and advantageous for continuous, economical film development. With minimal hand operations, successive film strips are trimmed, advanced to a splicing station, and joined to each other along abutting adjacent ends. The foregoing mode of operation is achieved without contact which would adversely effect the undeveloped film and, because of nominal hand operations, is able to be practiced in a darkened environment which does not expose the film.

3,622,426

LEIS, GARLANDS AND THE LIKE

Libert Kuuleilunalilo O'Sullivan, 1239 Ulupii St., Kailua, Hawaii, and Libert Amori O'Sullivan, 2040 C, 9th Ave., Honolulu, Hawaii

Filed June 20, 1969, Ser. No. 835,203
Int. Cl. A41d *25/02;* **A44c** *25/00*
U.S. Cl. 161—7 **2 Claims**

Means and steps for making a lei from elongated strips of flexible material such as ribbons and the like. It involves the

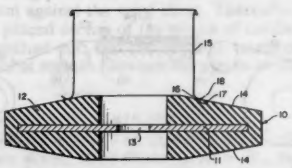
formation of laced mats and means to limit expansion of the lei.

3,622,427

PAD FOR TESTING THE SEAL OF A CAN

Andrew J. Kelly, West Roxbury, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed Apr. 28, 1970, Ser. No. 32,587
Int. Cl. G01m *3/02;* **B32b** *3/00, 15/06*
U.S. Cl. 161—42 **3 Claims**



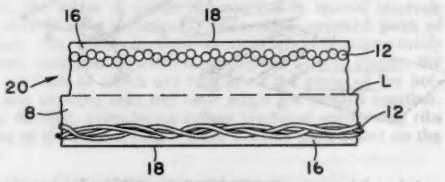
Sealing pads adapted to seal the open ends of cans while being tested on can body testing machines are formed of polychloroprene (neoprene), colloidal silica, and a plasticizer for the polychloroprene. Pads giving about 460,000 ends before failure result if the proportions of silica lie between 7 and 35 parts per hundred calculated on the weight of the polychloroprene, and if at the same time the weight of the plasticizer calculated on the same basis lies between 30 and 53 parts.

3,622,428

STAPLE FIBER REINFORCED THERMOPLASTIC FILM

James E. Robinson, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

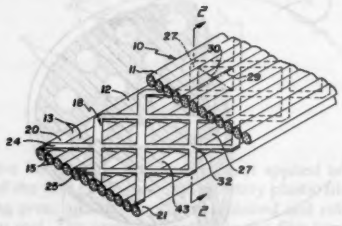
Filed May 16, 1968, Ser. No. 729,585
Int. Cl. B32b *5/08, 5/12*
U.S. Cl. 161—59 **13 Claims**



A film-staple fiber combination in which material of the film serves as a binder for the staple fibers of the web imparting strength to the web so that the web serves to reinforce the film. A method of combining the film and staple fiber web, neither of which by itself has significant strength, into a unitary product of high tensile, low caliber, great flexibility and toughness with a high degree of tear resistance and similar desirable physical characteristics for industrial use is provided. The product may be calendered for smoothness,

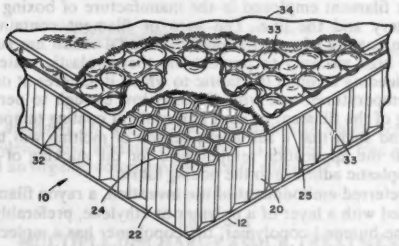
embossed to desired textures or to provide breathability, pigmented for opacity, appearance and printing purposes, and is useful in conjunction with mechanical fasteners as in tarpaulins, tents, industrial covers and garment fabrics in the nature of rainwear, protective clothing and the like.

3,622,429
SYNTHETIC STRAP
James A. Kippan, 440 Brooksbank Ave., North Vancouver, British Columbia, Canada
Filed Nov. 25, 1968, Ser. No. 778,483
Int. Cl. B32b *5/12*
U.S. Cl. 161—60 **14 Claims**



Synthetic strapping made up of two layers of synthetic filament yarns with a bonding band formed of compatible synthetic material located between these layers and fusion bonded to the surfaces of the yarns with which the band is in contact, some of the band material extending into spaces between the yarns and into spaces between the filaments of the individual yarn.

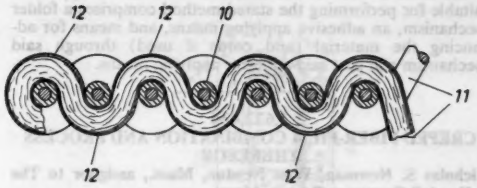
3,622,430
DIMPLED SHEET STRUCTURAL LAMINATE
Peter L. Jurisich, 5225 Bindewald Drive, Torrance, Calif.
Filed Nov. 24, 1969, Ser. No. 879,273
Int. Cl. B32b *3/12*
U.S. Cl. 161—68 **8 Claims**



A structural laminate comprising two outer and one inner reinforced resin sheets having major surfaces in overlying relationship, wherein one of said outer sheets and said inner sheet sandwiches a honeycomb or cellular core structure with said inner sheet also serving to sandwich a dimpled or relieved sheet with the other outer sheet.

3,622,431
ELASTIC WOVEN FABRIC
Christian H. Turcksin, No. 69a, Bachstrasse, Detmold, Lippe, Germany
Filed Apr. 3, 1968, Ser. No. 718,420
Claims priority, application Austria, Nov. 23, 1967, A 10601/67
Int. Cl. D03d *15/08, 17/00;* **F16a** *1/04*
U.S. Cl. 161—77 **1 Claim**

An elastic-woven fabric is provided which is both longitudinally and laterally stretchable and comprises an elastically stretchable warp and a weft consisting of unprocessed cellulose threads, said elastic fabric being impregnated with a



partly cured liquid latex and fully vulcanized after impregnation.

3,622,432
FLEXIBLE IONIZING RADIATION SHIELD BARRIERS
John D. McCluer, Charlotte, N.C., and Robert C. Roy, East Longmeadow, Mass., assignors to H. K. Porter Company, Inc., Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 364,010, Apr. 30, 1964, now abandoned , which is a continuation-in-part of application Ser. No. 230,983, Oct. 16, 1962, now abandoned , which is a continuation-in-part of application Ser. No. 93,159, Mar. 3, 1961, now Patent No. 3,253,947. This application Feb. 1, 1967, Ser. No. 622,859
Int. Cl. G21f *1/10, 3/02;* **B32b** *5/30*
U.S. Cl. 161—87 **9 Claims**

Flexible ionizing radiation shield barriers which comprise a heavily lead-loaded elastomeric layer adhering to a fabric base, thereby forming a thick heavy flexible material useful in shielding against radiation. The lead loading comprises at least 55 percent by total weight of the material, and is comprised of lead particles of, at most, 200 mesh.

3,622,433
DOUBLE WELT STRIP
Edward L. Clark, Wellington Drive, Bedford, Va.
Filed Jan. 8, 1968, Ser. No. 696,339
Int. Cl. B32b *3/04, 3/02*
U.S. Cl. 161—101 **5 Claims**

A double or single welt for use in the upholstered furniture and other industries, as well as a method and an apparatus for making such welts. The double welt comprises an elongated strip of textile or other material with its longitudinal edges folded or rolled inwardly toward each other to form two tubes, into which cords are preferably introduced, the outer surface of each infolded edge portion engaging the inner surface of the unfolded central portion of the strip and being permanently secured thereto as by adhesive, the cords being free to move longitudinally within the strip material. The single welt may be formed by slitting a double welt made

as stated, or by forming a single fold or tube from a narrower strip of material, utilizing essentially the same method of folding or rolling the material upon itself, inserting a cord if desired, and securing the outer surface of the folded material to the inner surface of the unfolded material. An apparatus suitable for performing the stated method comprises a folder mechanism, an adhesive applying means, and means for advancing the material (and cords if used) through said mechanism and past said adhesive applying means.

3,622,434

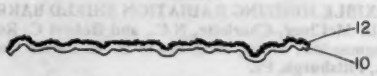
CREPED FIBER-FILM COMBINATION AND PROCESS THEREFOR

Nicholas S. Newman, West Newton, Mass., assignor to The Kendall Company, Boston, Mass.

Continuation-in-part of application Ser. No. 655,881, July 25, 1967, now abandoned. This application June 3, 1970, Ser. No. 42,924

Int. Cl. B32b *3/28*

U.S. Cl. 161—128 **7 Claims**



A lightweight fibrous fleece is prepared, containing a sufficient proportion of heat-retractable fibers to make the fleece potentially capable of shrinking 20 percent or more in area if heated without restraint. The fleece as prepared is bonded to a soft film which does not shrink to any great extent when heated under conditions which would cause the fleece to shrink. The bonding of fleece to film is done under restraint, not allowing shrinkage. Subsequently the fleece-film combination is heated without restraint. The heat-retractable fibers shrink, creating a pebbled or creped texture on both faces of the combination.

3,622,435

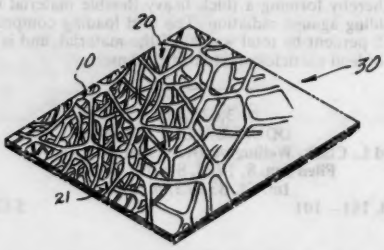
INTERBONDED COMPRESSED POLYURETHANE FOAM MATERIAL AND METHOD OF MAKING SAME

Arthur F. Cacella, 16 Hillwood Road, East Brunswick, N.J.

Filed Nov. 3, 1967, Ser. No. 680,504

Int. Cl. B32b *5/18*

U.S. Cl. 161—157 **9 Claims**



A permeable polyurethane sheet structure is formed by impregnating a skeletal polyurethane foam, such as a reticulated open cell foam, with a cross-linking agent, such as a polyisocyanate, having defined characteristics and compressing said foam with heat and pressure.

3,622,436

HIGH TEMPERATURE SEAL

John N. Johnson, Utica, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed May 18, 1970, Ser. No. 38,206

Int. Cl. B32b *3/26*

U.S. Cl. 161—160 **5 Claims**

A rubbing contact fluid seal, particularly suitable for use in a gas turbine engine rotary regenerator, comprising a reticulate metal facing layer bonded to a base member and adapted for rubbing contact with the regenerator, the facing layer having disposed in the pores thereof a seal material consisting of, by weight, 53 to 67% $NiFe_2O_4$, 3 to 18% ZnO and 28 to 32% sodium silicate which material is bonded in and to the facing layer by curing at 500° F.

3,622,437

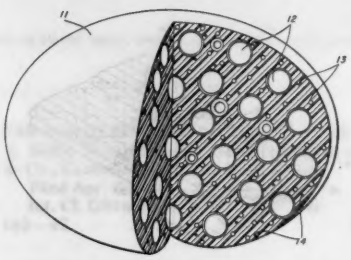
COMPOSITE BUOYANCY MATERIAL

Edward C. Hobaica, Mystic, Conn., and Sidney D. Cook, Warwick, R.I., assignors to General Dynamics Corporation, New York, N.Y.

Filed May 9, 1969, Ser. No. 823,270

Int. Cl. B63b *43/00*

U.S. Cl. 161—168 **9 Claims**



A buoyancy material is provided having hollow spheres made of a thermoplastic resin, encased in a matrix of syntactic foam. The spheres may be of a single diameter or of two or more diameters, each being one-seventh the diameter of the next larger.

3,622,438

THERMOPLASTIC COATED FILAMENTARY MEMBER

David H. Esler; Frank J. Hormuth; Jack C. Corcoran, and Jerry M. Markley, all of Grand Rapids, Mich., assignors to Sackner Products, Inc., Grand Rapids, Mich.

Filed Nov. 17, 1967, Ser. No. 683,821

Int. Cl. D02g *3/36*

U.S. Cl. 161—175 **9 Claims**

This disclosure relates to a thermoplastic adhesive coated yarn or filament employed in the manufacture of boxing for upholstery and the like. The yarn or filament contains a uniform coating of a thermoplastic material which has sufficiently high viscosity to prevent the thermoplastic material from bleeding through the fabric to which it adheres at ordinary temperatures, and with viscosity low enough to permit coating of the filament or yarn uniformly at coating temperatures and such that a suffucient degree of melting will take place at the application temperature for the sticking of the thermoplastic adhesive to the boxing fabric.

In a preferred embodiment of the invention, a rayon filament is coated with a layer of a polymer or ethylene, preferably an ethylene-butene-l copolymer, the copolymer has a molecular weight of less than 10,000, has dissolved therein and organic acid ester which produces a composition having a viscosity at 300° of 100,000 to 200,000 c.p.s., and a viscosity at 350° of less than 8,500 c.p.s. The preferred organic acid ester is ethyl palmitate.

3,622,439

OXYGEN IMPERMEABLE FILM LAMINATE

Stanley Manne, South Holland, and Myron S. Beyer, Danville, both of Ill., assignors to Tee-Pak, Inc., Chicago, Ill.

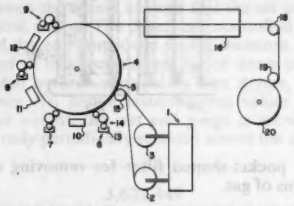
Continuation-in-part of application Ser. No. 658,764, Aug. 7, 1967. This application May 23, 1968, Ser. No. 731,563

Int. Cl. B32b *27/30, 27/38, 27/40*

U.S. Cl. 161—184 **5 Claims**

Impermeable plastic film laminates for use in the packaging of food products and other materials are formed by adhesive lamination of polyethylene or other plastic films to plastic films such as nylon, polyester, cellophane, polypropylene, polyehtylene, polyvinyl chloride, etc., by adhesive lamination with an oxygen and moisture vapor im-

permeable saran-containing adhesive, the adhesive preferably including a polymeric polyisocyanate. The polyehtylene portion of the laminate provides for heat sealability of the resulting film laminate. The nylon, polyester, cellophane, polypropylene, etc., film gives flex strength, abrasion resistance, gloss, vacuum formability, etc., to the film laminate. The saran adhesive gives an impermeable film laminate upon curing. In the manufacture of the film laminate, a pressure



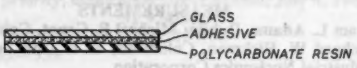
sensitive but curable saran adhesive is applied to one of the plies of the film laminate on an ordinary plastic film coater or printing press and the two film combined and rolled up on a windup reel. The pressure applied to the film laminate in the windup reel is the laminating force applied to the film and the film laminate is cured simply by being stored under pressure of being wound on the rolls. After curing of the saran adhesive, the plastic film plies cannot be easily separated.

3,622,440

VITREOUS AND ORGANIC RESIN LAMINATES HAVING LOW-TEMPERATURE UTILITY

Robert Howard Snedeker, Piscataway; Kenneth Thomas Garty, Somerville, and Frank Joseph Skiermont, Bound Brook, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Filed June 24, 1969, Ser. No. 835,933
Int. Cl. B32b *17/10, 27/30*
U.S. Cl. 161—193 **16 Claims**



Laminates are prepared with an adhesive which comprises ethylene-vinyl acetate copolymer, a source of free radicals and an organic compound source of silicon.

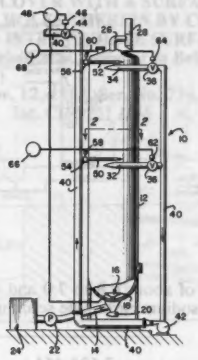
3,622,441

MULTIPLE DISCHARGE STOCK TREATMENT APPARATUS AND METHOD

Joseph K. Perkins, Atlanta, Ga., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Oct. 7, 1969, Ser. No. 864,339
Int. Cl. D21c *3/26*
U.S. Cl. 162—17 **22 Claims**

Stock treatment apparatus particularly suited for the bleaching of fibrous material such as pulp by chemicals such as chlorine or the hydrosulfides, comprising a generally upright elongated reaction vessel which is supplied inlet stock at its lower end. The vessel is provided with tangential outlets or stock discharge conduits arranged to discharge treated stock at locations spaced vertically from each other and above the vessel lower end; and above each outlet at least one tangential liquid supply conduit is connected to the vessel for supplying treated stock, extracted chemicals or other liquid thereto. The outlets and liquid supply conduits are provided with valves operable to permit alternative employment of each outlet and its respective vertically adjacent liquid supply conduit such that, by selective operation of the valves, the elevation at which treated stock is discharged from the vessel is variable to vary the period of retention of



stock in the vessel. Also, a method for stock treatment through the employment of such an apparatus.

3,622,442

NON-WOVEN FIBROUS WEBS BONDED WITH CROSS-LINKED ETHYLENE/CARBOXYLIC ACID COPOLYMERS AND METHODS OF MAKING SAME

Joseph Edward Reardon, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 852,092, Aug. 21, 1969, now abandoned. This application June 17, 1970, Ser. No. 47,110
Int. Cl. B32b *27/30, 27/38, 27/42*
U.S. Cl. 161—184 **10 Claims**

Nonwoven fibrous webs bonded with a cross-linked and partially neutralized ethylene/alpha, beta-ethylenically unsaturated carboxylic acid copolymer are provided which possess high tensile strength and stiffness without substantial loss of these properties after repeated washing or drycleaning. The copolymer comprises about 55 to 97 percent by weight ethylene and about 3 to 45 percent by weight of the alpha, beta-ethylenically unsaturated carboxylic acid (methacrylic acid), about 0 to 75 percent of the acid groups neutralized. Cross-linking of the copolymer occurs with about 1 to 25 percent by weight, based on the weight of copolymer, of an epoxy resin or an amino-formaldehyde resin preferably cured at 180° C. for 1 minute. The copolymer imparts the improved properties to the nonwoven web whereas the cross-linking resin gives durability.

ERRATUM

For Class 162—17 see:
Patent No. 3,622,441

3,622,443

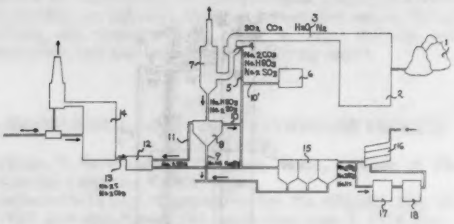
CHEMICAL RECOVERY SYSTEM FOR USE IN A PULPING PROCESS

Sergio F. Galeano, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Filed Mar. 4, 1970, Ser. No. 16,294
Int. Cl. D21c *11/02*
U.S. Cl. 162—36 **2 Claims**

A method for the utilization and recovery of sodium and sulfur values used in pulping processes which method includes contacting a first portion of a bisulfite sulfite solution with the smelt product of the recovery furnace with a resultant solution after clarification that can be employed as a cooking liquor. The bisulfite sulfite solution is produced by scrubbing sulfur dioxide with a sodium carbonate solution

having a molar concentration of from 0.1 to 1.0. The second portion of the bisulfite sulfite solution has a molar ratio of 4 to 1 and a pH of about 6.8 to 7.0 and is recycled and combined with the sodium carbonate scrubbing solution.



3,622,444

PULP BLEACHING PROCESS

Douglas Haig Andrews, Beloeil, Quebec, Canada, assignor to Canadian Industries Limited, Montreal, Quebec, Canada

Filed Mar. 25, 1970, Ser. No. 22,681
Claims priority, application Canada, Apr. 14, 1969, 048671
Int. Cl. D21c *3/18, 3/26, 3/02*
U.S. Cl. 162—85 **9 Claims**

A process for bleaching sulfate or sulfite wood pulp having as the first three steps; chlorination, caustic extraction and chlorination; the pulp in the chlorination steps being pretreated with ammonia or an ammonium salt. Additional process steps may follow. The process provides wood pulp bleached to a high-brightness level at relatively low chemical cost while avoiding severe degradation of the pulp.

3,622,445

GLASS-FIBER WEBS EMPLOYING GLASS FIBERS WITH DIAMETERS OF3–15 MICRONS

August Pieter Louis Heidweiler, Apeldoorn, Netherlands, assignor to Koninklijke Papierfabriken Van Gelder Zonen N.V., Amsterdam, Netherlands

Filed May 16, 1968, Ser. No. 729,578
Claims priority, application Netherlands, May 18, 1967, 67/06889
Int. Cl. D21f *5/18*
U.S. Cl. 162—145 **10 Claims**

Glass-fiber webs having a low weight per square meter and superior strength characteristics are made by preparing a homogeneous suspension of fibers of a glass selected from the group of C and E glasses, having a diameter of 3–15 microns, and fibers of a material selected from the group consisting of the polyesters, polyamides and polyvinyl chloride, in water, the weight ratio between the glass fibers on the one hand and the organic fibers on the other ranging from 10:1 to 1:1, bringing said suspension onto a moving screen cloth, removing the excess of water with about 5–50 percent of a binder being added somewhere during the process, and drying the fiber mat provided with a binder by heating.

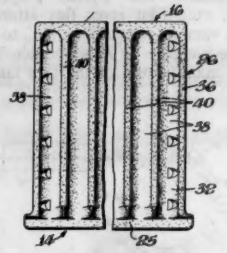
3,622,446

METHOD OF MAKING A POCKET-TYPE FILTER AND PRODUCT

Paul D. Burnham, Waterville, Maine, assignor to Keyes Fibre Company, Waterville, Maine

Continuation-in-part of application Ser. No. 701,895, Jan. 31, 1968, now abandoned. This application Dec. 30, 1969, Ser. No. 889,091
Int. Cl. D21h *5/12*
U.S. Cl. 162—146 **16 Claims**

An aqueous slurry is prepared which contains no substantial amount of phenol thermoset resin but has up to 30 percent wood pulp; 20–65 percent by weight of either olefin, acrylic, modacrylic, or vinylchloride-vinyl acetate copolymer fibers; and a balance of either rayon, polyester, polyamide, fiberglass, asbestos or a mixture of any two or more. Flame retardants may also be added. The slurry is suction molded to produce a pocket-shaped filter for removing contaminants from streams of gas.



3,622,447

PROCESS FOR THE MANUFACTURE OF BONDED FIBER SHEETS

Willem J. van der Geer, Oosterbeek, and Popke Wietsma, Arnhem, both of Netherlands, assignors to The B. F. Goodrich Company, New York, N.Y.

Filed Apr. 10, 1970, Ser. No. 27,419
Int. Cl. D21h *3/40*
U.S. Cl. 162—168 **8 Claims**

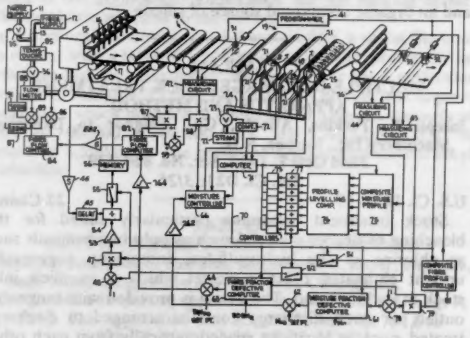
The invention relates to a process for the manufacture of bonded fiber sheets, by which process an aqueous polymer latex is mixed, in the presence of a thickening agent, with a coagulant for the latex, followed by mixing with fibers, after which the resulting suspension of fibers and coagulated latex particles is in a usual manner formed into a bonded sheet. The term "polymer latex" is meant to include here both latices of synthetic and/or natural rubbers in a narrower sense and a dispersion in water of a coagulable polymer such as polyvinyl chloride and copolymers thereof.

3,622,448

SYSTEM AND METHOD OF PROCESS CONTROL, PARTICULARLY PAPERMAKING PROCESSES IN RESPONSE TO FRACTION DEFECTIVE MEASUREMENTS

William L. Adams, Dublin; Michael P. Grant, Columbus, and Richard W. Hickman, Columbus, all of Ohio, assignors to Industrial Nucleonics Corporation

Filed Feb. 16, 1968, Ser. No. 706,059
Int. Cl. D21f *5/06*
U.S. Cl. 162—198 **16 Claims**



Disclosed are a system for and method of controlling processes of paper sheet manufacture. In response to basis weight signals at the process wet and dry ends, as well as a moisture signal from the dry end, a proportionality constant indicative of the sheet fiber fraction at the wet end is computed. The proportionality constant is combined with the wet

end basis weight output to indicate fiber content at the dry end and control fiber flowing into the papermaking headbox. Control of fiber flow into the headbox and moisture removed by the drying sections is respectively in response to indications of the amount of fiber and moisture at the dry end being less than defective limits. For moisture, the amount of moisture values above a reject limit for moisture is compared with a set point for the amount of moisture values above the reject limit. For fiber content, the amount of fiber values below a reject limit for fiber is compared with a set point for the amount of fiber values below the reject limit. Any difference between the actual amount and the set point will initiate corrective action. The dryers are controlled by wet end moisture and dry end composite profile moisture. The dryers are controlled so that the inherent lag of steam units therein is compensated by heat supplied by trim dryers, having fast response times. To derive instantaneous values of average wet end basis weight, the wet end gauge is normally single-pointed and only periodically scanned across the sheet.

3,622,449

METHOD OF FORMING A CONTINUOUS WEB OF UNIFORM THICKNESS BY APPLYING RECIPROCATING ACTION TO CELLULOSIC FIBROUS STOCK IN A HEADBOX

Emile A. Cambron, Hudson, Quebec, Canada, assignor to Domtar Limited, Montreal, Quebec, Canada

Filed Nov. 21, 1968, Ser. No. 777,710
Claims priority, application Canada, Oct. 21, 1968, 33,147
Int. Cl. D21f *11/02*
U.S. Cl. 162—216 **2 Claims**

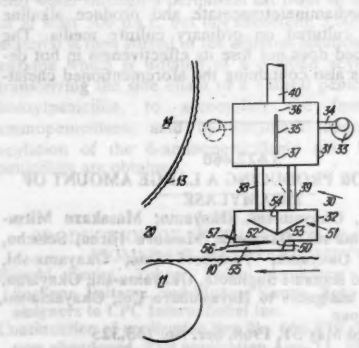
The present invention relates to a method for forming a continuous web of substantially fibre-containing stock having a consistency in the range of about 6 to 35 percent by applying a reciprocating action to the stock in a headbox to advance the stock onto a forming surface, said reciprocating action providing substantially the sole means causing said stock to flow from said headbox.

3,622,450

PAPERMAKING FLOW BOX

Brian William Attwood, Hanham, near Bristol, and Harold George Curry, Hambrook, near Bristol, both of England, assignors to St. Anne's Board Mill Company, Limited, Bristol, England

Filed June 4, 1969, Ser. No. 830,421
Claims priority, application Great Britain, July 4, 1968, 31,974/68
Int. Cl. D21f *1/06*
U.S. Cl. 162—339 **12 Claims**



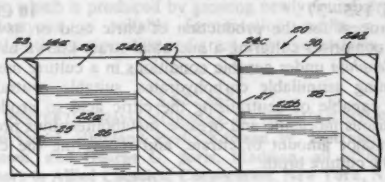
A flow box for a papermaking machine including an explosion chamber having a stock inlet and stock outlet positioned on opposite sides of the explosion chamber, each of overall cross section less than the transverse cross section of the explosion chamber at the inlet and outlet. A baffle plate, having oppositely extending free ends, disposed transversely of the direction of flow of stock from inlet to outlet, divides the explosion chamber into two subchambers which are defined by two restricted passages formed between the free ends of the baffle plate and the walls of the explosion chamber. The explosion chamber creates turbulence and mixing of stock flowing therethrough without streaming thereof.

3,622,451

SUCTION BOX COVER WITH A SURFACE WHICH MERGES WITH HOLES THEREIN BY CONCAVELY FORMED INTERMEDIATE SURFACES

Alvin C. Roecker, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Nov. 12, 1968, Ser. No. 774,768
Int. Cl. D21f *1/48*
U.S. Cl. 162—374 **2 Claims**



A suction box for a papermaking machine wherein the holes through the suction box cover include, at least the leading and trailing edges thereof, concave edges which prevent wear of the forming wire and prevent rewetting of the paper web.

3,622,452

PROCESS FOR PRODUCING INOSINE BY FERMENTATION

Katsunobu Tanaka, Machida-shi; Kazuo Ohshima, Tokyo, and Yoh Tokoru, Tokyo, all of Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Feb. 13, 1968, Ser. No. 705,015
Claims priority, application Japan, Feb. 14, 1967, 42/8987
Int. Cl. C12d *13/06*
U.S. Cl. 195—28 N **5 Claims**

A process for producing inosine by fermentation which comprises culturing a hydrocarbon-assimilating micro-organism capable of producing inosine under aerobic conditions in an aqueous nutrient medium containing at least one hydrocarbon as the main carbon source. Exemplary micro-organisms which may be employed include *Brevibacterium ketoglutamicum*, *Arthrobacter paraffineus*, and *Corynebacterium hydrocarboclastus*.

3,622,453

PROCESS FOR PRODUCING L-THREONINE

Katsumi Akeyama, and Katsuya Nasu, both of Hofu-shi, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Sept. 9, 1968, Ser. No. 758,592
Claims priority, application Japan, Sept. 12, 1967, 42/58132
Int. Cl. C12d *13/06*
U.S. Cl. 195—29 **17 Claims**

A process for producing L-threonine by fermentation which comprises culturing a micro-organism capable of producing L-threonine under aerobic aqueous in an equeous nutrient medium containing an antibiotic, for example, streptomycin. The addition of the antibiotic makes it possible to accumulate large yields of L-threonine in the culture liquor and prevents the conversion and disappearance thereof.

3,622,454

PROCESS FOR THE PREPARATION OF DEXTROSE USING ALPHA AMYLASE

Leonard Keay, Florissant, Mo., assignor to Monsanto Company, Saint Louis, Mo.

Filed Aug. 29, 1969, Ser. No. 854,299
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 **6 Claims**

Dextrose solutions having high dextrose content (in excess of about 85 percent dextrose weight based on the weight of the dry substance in the solution) are obtained by treating an

aqueous starch solution with alpha amylase derived from the organism *Bacillus subtilis* var. *amylosacchariticus*.

3,622,455

PROCESS FOR THE PRODUCTION OF CITRIC ACID BY FERMENTATION

Hiroshi Iizuka; Junichi Shimizu; Kazumitsu Ishii, and Yoshikazu Nakajima, all of Tokyo, Japan, assignors to Mitsui Sugar Co., Ltd., Tokyo, Japan

Filed Nov. 20, 1968, Ser. No. 777,483

Claims priority, application Japan, Dec. 19, 1967, 42/80915

Int. Cl. C12d *1/04*

U.S. Cl. 195—37 **10 Claims**

A process for the production of citric acid or its salts, which comprises culturing a microbial strain known as *Candida oleophila* under aerobic conditions in a culture medium containing assimilable carbohydrates, suitable neutralizing agents capable of neutralizing the citric acid so produced, and various inorganic and organic metabolites, thus producing a major amount of citrate, and recovering the citrate from the culture broth.

3,622,456

PROCESS FOR PRODUCING MANNITOL BY FERMENTATION

Hiroshi Onishi, and Toshiyuki Suzuki, both of Noda-shi, Japan, assignors to Noda Institute for Scientific Research, Noda-shi, Japan

Filed July 16, 1969, Ser. No. 842,346

Claims priority, application Japan, July 26, 1968, 43/52482

Int. Cl. C12c *1/00*

U.S. Cl. 195—37 **8 Claims**

Mannitol is prepared by aerobically cultivating microorganisms belonging to *Torulopsis* in a culture medium containing D-glucose, maltose, glycerol and/or xylitol as a main carbon source and then recovering the mannitol produced. The microorganism is *Torulopsis mannitofaciens* ATCC 20221.

3,622,457

PROCESS FOR PREPARING 5-(AMINOALKYLAMINO)-6 (OR 7)-HALO-8-QUINOLINE METHANOLS

Emery W. Dennis, Albany, and David Rosi, East Greenbush, both of N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Filed Dec. 5, 1969, Ser. No. 882,722

Claims priority, application Great Britain, Dec. 9, 1968, 58,462/68

Int. Cl. C12d *1/00*

U.S. Cl. 195—51 R **4 Claims**

5-(aminoalkylamino)-6(or 7)-halo-8-quinolinemethanols, having schistosomacidal activity, are prepared by subjecting the correspoonding 6(or 7)-halo-5-(aminoalkylamino)-8-methylquinoline to the fermentative enzymatic action of a micro-organism capable of effecting oxidation of the 8-methyl group to 8-hydroxymethyl, said micro-organism being of an order selected of the group consisting of Moniliales, Mucorales, Sphaeriaelses, Sphaeropsidales, Melanconiales and Actinomycetales.

3,622,458

PRODUCTION OF A NEW PROTEASE

Sawao Murao, Sakai, Japan, assignor to Sanraku - Ocean Co., Ltd., Tokyo, Japan

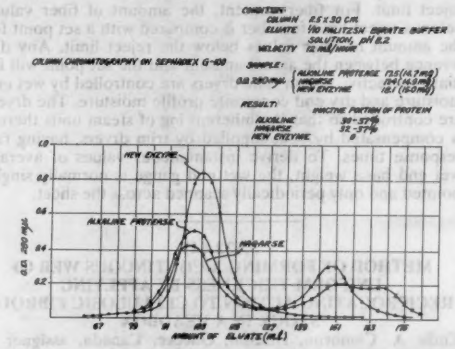
Filed Sept. 29, 1969, Ser. No. 861,911

Claims priority, application Japan, Oct. 2, 1968, 43/71084

Int. Cl. C07g *7/028*

U.S. Cl. 195—62 **10 Claims**

A new, peptide-forming type of alkaline protease which is characteristically different from any similar commercial product in substrate specificity, decomposition pattern, amino acid composition, elementary analysis and other physicochemical properties, and which has the greatest enzymatic activity between pH 11.0 and 11.7. The invention includes a method of preparing said enzyme by cultivating *Bacillus subtilis var sakainensis* (ATCC 21394), and by purifying the crude enzyme preparation obtained therefrom at a



larger yield in comparison with other commercially available proteases, in crystal form, by a very simplified method.

3,622,459

METHOD OF PREPARING A PROTEOLYTIC ENZYME BY FERMENTATION

Kojo Mitsugi; Yoshiteru Hirose; Masami Hoshino; Sadanobu Tobe, and Kohei Hashimoto, all of Kanagawa-ken, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jan. 27, 1970, Ser. No. 6,277

Claims priority, application Japan, May 2, 1969, 44/34235

Int. Cl. C12d *13/10*

U.S. Cl. 195—66 R **3 Claims**

Cettain strains of *Bacillus subtilis* are capable of growing in otherwise conventional media containing chelating agents such as sodium tripolyphosphate, sodium nitrilotriacetate, or sodium ethylenediaminetetraacetate and produce alkaline protease when cultured on ordinary culture media. The protease produced does not lose its effectiveness in hot detergent solutions also containing the aforementioned chelating agents.

3,622,460

PROCESS FOR PRODUCING A LARGE AMOUNT OF ISOAMYLASE

Kazuo Masuda, Okayam-shi, Okayama; Masakazu Mitsuhashi, Okayama-shi, Okayama; Mamoru Hirao, Setocho, Akaiwa-gun, Okayama; Yoshinori Sato, Okayama-shi, Okayama, and Kaname Sugimoto, Okayama-shi, Okayama, all of Japan, assignors to Hayashibara Co., Okayama-shi, Okayama, Japan

Filed May 31, 1968, Ser. No. 733,325

Claims priority, application Japan, June 1, 1967, 42/34468

Int. Cl. C12d *13/00*

U.S. Cl. 195—66 R **2 Claims**

According to the present invention, a strain of *Aerobacter aerogenes* is engaged in a preliminary culture upon a streak culture and then one platinum loop of the resulting seed culture is inoculated into a liquid medium sterilized as usual, which medium contains ammonium salt as a nitrogen source and liquefied starch as a carbon source, and is cultured under the condition of pH 5–8 to produce a large amount of isoamylase.

3,622,461

PROCESS FOR THE EXTRACTION OF L-ASPARAGINASE

Otto Wagner, Wuppertal-Elberfeld; Klaus Bauer, Wuppertal-Elberfeld; Wilfried Kaufmann, Wuppertal-Vohwinkel; Erich Rauenbusch, Wuppertal-Elberfeld; Alfred Arens, Wuppertal-Elberfeld, and Eckart Irion, Wuppertal-Elberfeld, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Dec. 26, 1968, Ser. No. 787,195
Claims priority, application Germany, May 6, 1968, P 17 67 390.4, P 17 67 498.5
Int. Cl. C07g 7/028
U.S. Cl. 195—66 A 4 Claims

From a culture of *E. coli* the bacterial mass is flocculated by addition of an organic base or a salt thereof having an amino function and a molecular weight above 1,000. The flocculated cells are centrifuged, resuspended in water and precipitated by a water-miscible solvent, such as acetone. The cells which are simultaneously opened by the previous step are centrifuged away and again resuspended in water, whereby the enzyme is extracted from the cells. By addition of the organic base, mentioned above, to the suspension, the extracted cells, nucleic acids and ballast proteins are precipitated and are removed by centrifugation. The L-asparaginase is precipitated from the cell-free solution by addition of acetone.

3,622,462

PROCESS FOR MANUFACTURE OF AN ENZYME PREPARATION

Per Staffan Delin; Bertil Ake Ekstrom; Lars Solve Nathorst-Westfelt; Berndt Olof Harald Sjoberg, and Karl Hugo Thelin, all of Sodertalje, Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Filed Feb. 17, 1969, Ser. No. 799,983
Claims priority, application Great Britain, Feb. 15, 1968, 7,544/68
Int. Cl. C07g 7/02
U.S. Cl. 195—66 11 Claims

An improved process for the large-scale production of penicillin acylase wherein the purified, cell-free enzyme is prepared by fermenting an E. coli cell strain and separating the intracellular enzyme under controlled temperature from the culture fluid by the rapid expulsion of the cell material into water through a peripheral slit from an applied pressure of at least 500 p.s.i., but not exceeding 3,000 p.s.i. The cell material is then stirred in the aqueous solution to dissolve the enzyme which is isolated as a purified acylase capable of transferring the side chain of a natural penicillin, especially benzylpenicillin, to accomplish the formation of 6-aminopenicillanic acid by enzymatic degradation. Upon acylation of the 6-aminopenicillanic acid hypo-allergenic penicillins are obtained.

3,622,463

PRODUCTION OF EXTRACELLULAR GLUCOSE ISOMERASE BY STREPTOMYCES

Hiroshi Iizuka, Tokyo; Yaichi Ayukawa, Tokyo; Mikio Suekane, Saitama, and Mutsuo Kanno, Tokyo, all of Japan, assignors to CPC International Inc.

Continuation of application Ser. No. 666,979, Sept. 11, 1967, now abandoned. This application Aug. 11, 1969, Ser. No. 850,333
Int. Cl. C12d 13/10
U.S. Cl. 195—66 R 10 Claims

Covers a glucose isomerase enzyme preparation having extracellular enzyme activity. Also covers a method of producing the above enzyme preparation, particularly by employing a mixture of starch and xylose as a suitable carbon source in a culture medium and by utilizing a Streptomyces species as the organism capable of producing this enzyme preparation. In addition, covers a method of isomerizing glucose to fructose by contacting glucose with the above enzyme preparation.

3,622,464

PREPARATION OF (—) (CIS-1,2 EPOXYPROPYL) PHOSPHONIC ACID

Edward O. Stapley, Metuchen, and Marion Jackson, Cranford, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jan. 14, 1969, Ser. No. 791,172
Int. Cl. C12d 9/00
U.S. Cl. 195—80 4 Claims

Increased yields of the antibiotic (—) (cis-1,2-epoxypropyl)-phosphonic acid are obtained by the addition of a source of citrate to fermentation media composed of complex organic and/or chemically defined nutrients. The antibiotic which is produced by growing newly found strains of Streptomyces on suitable fermentation media is active against both gram-positive and gram-negative bacteria.

3,622,465

PROTEIN FROM NORMAL HYDROCARBONS

Gerald Orgel, Highland Park; Edward W. Pietrusza, Morristown, and George G. Joris, Madison, all of N.J., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Mar. 10, 1967, Ser. No. 622,243
Int. Cl. A23j 1/00; C12d 13/06
U.S. Cl. 195—96 9 Claims

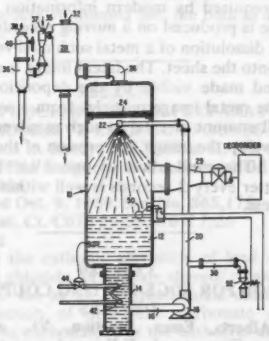
A process for the biosynthesis of protein wherein the micro-organism *Arthrobacter simplex* is cultivated under submerged aerobic conditions in an aqueous culture medium containing a C_3 to C_{18} straight chain hydrocarbon as the principal source of assimilable carbon and energy, an assimilable source of nitrogen and essential inorganic salts and the organism growth is thereafter separated from said culture medium.

3,622,466

METHOD OF RECOVERING WATER-FREE FATTY ACID DISTILLATES BY SELECTIVE CONDENSATION

Richard W. West, Irwin, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Mar. 3, 1969, Ser. No. 813,386
Int. Cl. B01d 3/34, 5/00
U.S. Cl. 203—1 3 Claims



A method of recovering a condensable fluid such as fatty acids, created by the deodorization of vegatable oils from a vaporous mixture containing the fatty acid as a constituent which involves spraying the fatty acid in liquid form into direct heat transfer relation with the vaporous mixture in a vessel subject to an equilibrium condition enabling condensation of the fatty acid vapors only.

3,622,467
PROCESS FOR THE RECOVERY AND PURIFICATION OF ALKYL METHACRYLATE

Alden E. Blood; Max Statman, and Glenn L. Phillips, all of Longview, Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

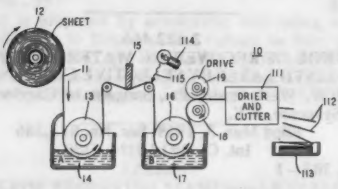
Filed Oct. 16, 1967, Ser. No. 675,348
Int. Cl. B01d *3/10*
U.S. Cl. 203—75 **9 Claims**

A process for recovering alkyl methacrylates from reactor effluent obtained from the hydrogen iodide hydrate catalyzed oxidative dehydrogenation of alkyl isobutyrates, wherein the reactor effluent contains isobutyric acid in an amount of at least 20 weight percent based on the alkyl methacrylate. The isobutyric acid serves as a polymerization inhibitor which allows distillation of the alkyl methacrylate at atmospheric pressure. Also, the low-boiling coproducts can be recycled to the reactor with unreacted alkyl isobutyrate without producing additional undesirable side products.

3,622,468
HIGH-SPEED ELECTROLYTIC PRINTING INCLUDING IMAGE INTENSIFICATION

Dennis R. Turner, Chatham Township, Morris County, and Catherine Wolowodiuk, New Providence, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 21, 1969, Ser. No. 878,815
Int. Cl. B21h *1/20*; **G01d** *15/06*; **B32b** *15/00*
U.S. Cl. 204—2 **11 Claims**



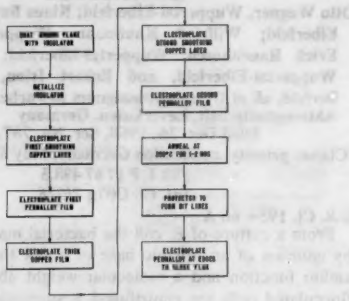
In order to derive prints from electrical signals at speeds which are required by modern information transmission, a latent image is produced on a moving recording sheet by the electrolytic dissolution of a metal such as silver from an array of anodes onto the sheet. The latent image is subsequently intensified and made visible by the deposition of additional metal on the metal image particles from a solution. Because of the small amount of catalyst such as silver needed on the sheet to develop the image, the erosion of the anodes is relatively slow. The production of one 8½×11 inch sheet of printed matter every 2 seconds is well within the capabilities of the process.

3,622,469
METHOD FOR EDGE-PLATING COUPLED FILM DEVICES

Gene S. Alberts, Essex Junction, Vt., and James M. Brownlow, Crompound, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 10, 1968, Ser. No. 743,736
Int. Cl. C23b *5/48*, *5/32*, *5/34*
U.S. Cl. 204—15 **7 Claims**

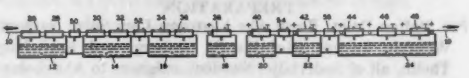
An improved method of edge-plating large coupled film memories is disclosed. The improvement resides in the edge-plating step in which an etched coupled film device is immersed in a nickel-iron or nickel-iron-copper plating bath comprising K_2CO_3 0.0 moles to 0.00362 moles; NaK tartrate 0.0248 moles to 0.0532 moles; $NiCl_2 \cdot 6H_2O$ 0.084 moles to 0.211 moles; $FeSO_4 \cdot 7H_2O$ 0.0054 moles to 0.0211 moles; $CuSO_4 \cdot 5H_{b6}O$ 0.0006 moles to 0.002 moles; saccharin as a 10 percent solution 0.10 g. to 0.06 g.; H_2O to make 1 liter; and having a pH of from 3.9 to 5.8. The magnetic edge film is plated by a pulse plating technique in which the current pulses have a duration of about 6 seconds, the solution is stirred for about 4 seconds and the pulse remains off for about 24 seconds before starting the next current pulse.



3,622,470
CONTINUOUS PLATING METHOD

Lawrence P. Gowman, Marlette, Mich., assignor to Wire & Strip Platers, Inc., Marlette, Mich.

Filed May 21, 1969, Ser. No. 826,381
Int. Cl. C23b *5/50*, *5/62*
U.S. Cl. 204—33 **3 Claims**

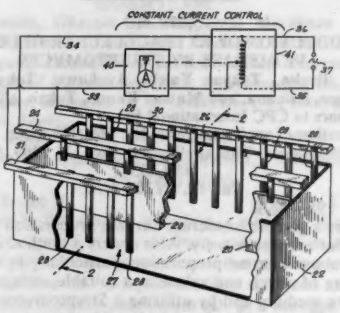


A method of continuously plating aluminum wire or strip stock. The stock passes through an alkaline etch bath, an acid oxidizing bath, a conditioner bath containing tin, and a bronze-plating bath in which bronze is plated on the aluminum. The conditions of concentration, temperature, and solution movement are all controlled so as to achieve continuous plating of bronze while feeding the stock at a relatively high speed. Following the bronze plating, further plating and/or drawing steps may be carried out.

3,622,471
PRODUCTION OF INORGANICALLY COLORED COATINGS ON ALUMINUM

William Ernest Cooke, and Paul John Sajben, both of, Kingston, Ontario, Canada, assignors to Alcan Research and Development Limited, Montreal, Quebec, Canada

Filed July 2, 1968, Ser. No. 742,000
Int. Cl. C23b *5/50*, *5/68*
U.S. Cl. 204—35 N **15 Claims**



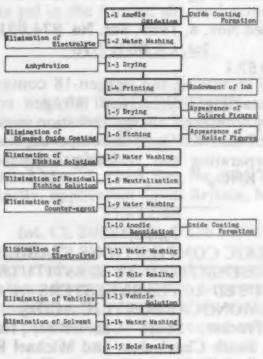
In procedure and apparatus where inorganically colored coatings on aluminum are produced by first anodizing the

aluminum articles and then treating such anodically coated aluminum with alternating current in an acidic bath containing metal ions for producing a colored deposit in the coating, the alternating current treatment is effected between an anodized aluminum workload and a plurality of electrode elements constituting a counterelectrode, which are distributed along a region that faces the workload, e.g. elements of the same metal as the ions in the bath, the distribution and spacing of the elements being of a described nature such as to improve the desired results and to facilitate control. With substantially uniform alternating current density over the anodized aluminum in the above manner, control of operation is further facilitated by maintaining a selected current value condition or conditions for corresponding current density control, preferably such that the color obtained is determinable in accordance with duration of the treatment.

3,622,472
METHOD OF SELECTIVELY DYEING AND ETCHING ANODIZED ALUMINUM

Masanori Izumikawa, Urawa-shi, Japan, assignor to Yoshitaka Katayama, Tokyo, Japan

Filed Mar. 28, 1969, Ser. No. 811,369
Claims priority, application Japan, Mar. 14, 1969, 44/19354
Int. Cl. C23f *5/04*
U.S. Cl. 204—35 N **7 Claims**



This method involves etching of parts, except for portions corresponding to desired figures, by steeping the parts in etching solution after anodic oxidation of aluminium and printing figures on its surface. This is very useful in presenting colored relief figures on the surface of aluminium and forming figure patterns of aluminium on the surface of acid- and alkali-proof materials.

3,622,473
METHOD OF PROVIDING ALUMINUM SURFACES WITH COATINGS

Toshiyuki Ohta, and Hisashi Takao, both of Kobe-shi, Japan, assignors to Honny Chemicals Co., Ltd., Nagata-Ku Kobe, Japan

Continuation-in-part of application Ser. No. 494,885, Oct. 11, 1965, now abandoned. This application Sept. 25, 1969, Ser. No. 861,181
Claims priority, application Japan, Oct. 15, 1964, 39/58326
Int. Cl. C23f *17/00, 9/02, 13/00*
U.S. Cl. 204—38 A **7 Claims**

Aluminum articles are produced with a surface coating of high-durability by first electrolytically oxidizing the article in an acidic anodizing bath and after water washing, depositing the article in an aqueous dispersion, emulsion or solution of a thermosetting resin and passing a current through said article as the anode to cause electrodeposition of resin particles in the oxidized porous surface. The article is then heated to cure the resinous film.

3,622,474
ELECTRODEPOSITION OF OSMIUM

Lawrence Greenspan, New York, N.Y., assignor to Engelhard Minerals & Chemicals Corporation, Newark, N.J.

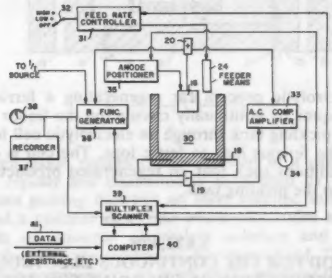
Filed July 18, 1969, Ser. No. 843,174
Int. Cl. C23b *5/24*
U.S. Cl. 204—47 **14 Claims**

An electrolytic bath is provided from which osmium is electroplated. The bath is comprised of an aqueous alkaline solution having dissolved therein an octavalent osmium compound and an alkali metal salt of sulfamic acid.

3,622,475
REDUCTION CELL CONTROL SYSTEM

Harry T. Shiver, and William E. Campbell, both of Portland, Oreg., assignors to Reynolds Metals Company, Richmond, Va.

Continuation-in-part of application Ser. No. 400,059, Sept. 29, 1964, now abandoned. This application Aug. 21, 1968, Ser. No. 769,434
Int. Cl. C22d *3/12, 3/02*
U.S. Cl. 204—67 **31 Claims**



Method of operating (and apparatus including) an electrolytic cell for the production of aluminum, in which provision is made for monitoring the cell resistance, producing feed control signals responsive to cell resistance changes, and regulating the feeding of alumina into the bath in accordance with such signals.

3,622,476
CATHODIC PROCESS FOR THE PREPARATION OF TETRAALKYL LEAD COMPOUNDS

Kang Yang; James D. Reedy, and William H. Harwood, all of Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

Filed Oct. 9, 1969, Ser. No. 865,175
Int. Cl. C07b *29/06;* C07f *7/26*
U.S. Cl. 204—72 **5 Claims**

A process for the cathodic alkylation of lead using ethyl chloride, methyl chloride, or mixture thereof as an alkylating agent and iodide ion as an electrochemical catalyst with a liquid-liquid junction of propylene carbonate and water wherein propylene carbonate is in the catholyte and water is in the anolyte.

3,622,477
SYNTHESIS OF N;N'-DISUBSTITUTED BIPYRIDYLIUM SALTS

John Edward Colchester, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Mar. 5, 1969, Ser. No. 804,651
Claims priority, application Great Britain, Mar. 15, 1968, 12,644/68
Int. Cl. C07b *29/06;* C07d *31/02*
U.S. Cl. 204—73 **14 Claims**

There is provided a process for the production of 1,1'-disubstituted-4,4'-bipyridylium salts which comprises reducing

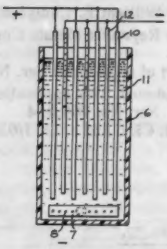
an N-substituted 4-cyanobipyridinium salt electrolytically or by means of a reducing agent under conditions whereby free cyanide ions are removed from the reaction medium as they are liberated, for example by carrying out the reduction in the presence of a cyanide ion sequestering agent.

3,622,478

CONTINUOUS REGENERATION OF FERRIC SULFATE PICKLING BATH

Stanley J. Beyer, Louisville, Ky., assignor to General Electric Company

Filed Nov. 14, 1960, Ser. No. 876,836
Int. Cl. B01k *1/00*; C23b *1/04*; B01k *3/00*
U.S. Cl. 204—130 18 Claims



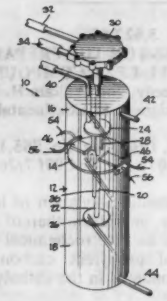
An electrolytic process for regenerating a ferric sulfate pickling liquor by continually circulating the liquor from an operating pickling tank through an electrolytic cell to oxidize some of the ferrous ions to ferric ions. The cell is operated under conditions such that all regenerated products can be returned to the pickling tank.

3,622,479

METHOD FOR THE CONTINUOUS ELECTROLYTIC PRODUCTION OF CHLORINE FOR THE STERILIZATION OF WATER

Frank L. Schneider, Port Washington, N.Y., assignor to Albert Young, Miami, Fla., a part interest

Original application June 4, 1969, Ser. No. 830,273. Divided and this application Mar. 4, 1970, Ser. No. 019,138
Int. Cl. B01k *1/00, 3/00*
U.S. Cl. 204—149 3 Claims



An apparatus for continuous electrolytic production of chlorine in sterilize water, comprisng a nonconductive housing divided into an upper chamber and a lower chamber, a motor-turned shaft disposed through both chambers provided with a rotative disc for each chamber, a syphon affording liquid communication between the chambers, electrodes disposed in the upper chamber, a water inlet line disposed over the upper disc, the syphon outlet disposed over the lower disc, a gas exhuast line in the upper chamber and a water outlet line at the base of the lower chamber. The method of electrolyzing an electrically conductive solution by fragmentizing it before it reaches the electrodes, gathering the drops back into solution in the presence of the electrodes, refragmentizing the solution on leaving the electrodes and regathering the drops into solution.

3,622,480

METHOD OF INCREASING THE CONCENTRATION OF OYXGEN-18 IN AN OXYGEN-CONTAINING COMPOUND

Everett R. Johnson, Chevy Chase, Md.; Edwin N. Ladov, Maple Shade, N.J., and Earl W. Holtzscheiter, Jr., College Park, Md., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 4, 1969, Ser. No. 874,030
Int. Cl. B01j *1/10*
U.S. Cl. 204—157.1 3 Claims

A method of producing oxygen-18 enriched compounds comprising irradiating a compound containing an oxyganion with high energy radiation in the presence of a gas containing oxygen-18.

3,622,481

METHOD OF PRODUCING COMPOUNDS ENRICHED IN OXYGEN-18

Everett R. Johnson, Chevy Chase, Md., and Edwin N. Ladov, Maple Shade, N.J., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 4, 1969, Ser. No. 874,031
Int. Cl. B01j *1/10*
U.S. Cl. 204—157.1 5 Claims

A method of increasing the oyxgen-18 concentration in a compound containing oxygen and nitrogen comprising irradiating KNO_3 with high energy radiation until at least 10 mole percent of said KNO_3 is decomposed into KNO_2 and oyxgen and separating the resulting oxygen-18 enriched KNO_2 from the KNO_3.

3,622,482

POLYMERIC COMPOSITIONS STABILIZED & PHOTOSENSITIZED BY SUBSTITUTED & UNSUBSTITUTED ACYLARYLESTERS OF ORGANIC MONOCARBOXYLIC ACIDS

David John Trecker, South Charleston; Henry Octave Colomb, Jr., South Charleston, and Michael Ray Sandner, Charleston, all of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Filed July 16, 1969, Ser. No. 842,335
Int. Cl. C08d *1/00*; C08f *1/16, 45/58*
U.S. Cl. 204—159.14 10 Claims

Polymer compositions containing a minor amount of a photosensitizer-stabilizer are disclosed. The photosensitizer-stabilizer serves both to sensitize or accelerate the cross-linking on irradiation and then to stabilize the polymer against further cross-linking or degradation after the cross-linking reaction has been completed. The useful compounds are the substituted and unsubstituted acylaryl esters of organic monocarboxylic acids, such as 4-acetylphenyl benzoate, 2-acetyl-4-methylphenyl acetate, 2-acetyl-4-methylphenyl benzoate, etc. The polymer compositions can be used as protective coatings, fibers, films, for production of extruded and molded articles and those utilities in which polymers are customarily used.

3,622,483

ELECTRICAL DEPOSITION OF MATERIAL

Robert Paul Randall, Uxbridge, Middlesex, and Henry Kenneth Beale, Pinner, Middlesex, both of England, assignors to Electric & Musical Industries Limited, Hayes, Middlesex, England

Filed Nov. 7, 1968, Ser. No. 774,035
Claims priority, application Great Britain, Nov. 8, 1967, 50,821/67
Int. Cl. B01k *5/00*
U.S. Cl. 204—181 7 Claims

Insulating particles are deposited on an insulating support bearing a conductive film by positioning it between an anode

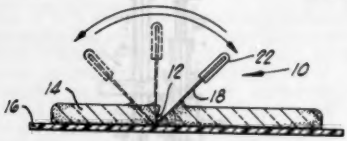
and cathode in an electrically conducting solution so that it faces the anode, but without electrical connection with the anode or cathode, connecting the conductive film to a conductive part in sight of the cathode and establishing a potential difference between the cathode and anode.

3,622,484

SAMPLE PLACING METHOD

Leo P. Cawley, 550 N. Hillside, Wichita, Kans.

Filed Feb. 9, 1970, Ser. No. 9,625
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 **4 Claims**



This invention is a method of inserting serum specimen into a stabilizing media gel as used in preparing samples for electrophoresis and immunoelectrophoresis processes. More particularly, the method of this invention comprises placing the serum specimen on the edge of a blade, inserting the blade into the stabilizing media gel, thereby removing the serum from the blade and depositing the serum in the stabilizing media gel in the formed slit, and removing the blade from the gel.

3,622,485

ELECTRODEPOSITION

Robert A. Preece, and William G. Topham, both of Liverpool, England, assignors to Goodlass Wall and Company Ltd., Speke Liverpool, England

Filed Mar. 7, 1969, Ser. No. 806,780
Claims priority, application Great Britain, Mar. 9, 1968, 11,612/68
Int. Cl. B01k *5/02*; **C23b** *13/00*
U.S. Cl. 204—181 **8 Claims**

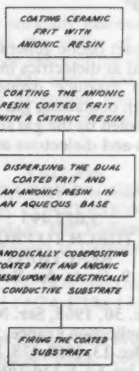
The electrophoretic deposition technique of a film of resin on a metal object from an aqueous dispersion of the resin using alternating current is improved by using an aluminum electrode and particularly one of commerically pure aluminum.

3,622,486

ANODIC DEPOSITION OF FRIT IN DUAL ENVELOPE

George E. F. Brewer, Novi, and Robert A. Swider, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 12, 1969, Ser. No. 884,446
Int. Cl. B01k *5/02*; **C23b** *13/00*
U.S. Cl. 204—181 **1 Claim**


COATING CERAMIC FRIT WITH ANIONIC RESIN
COATING THE ANIONIC RESIN COATED FRIT WITH A CATIONIC RESIN
DISPERSING THE DUAL COATED FRIT AND AN ANIONIC RESIN IN AN AQUEOUS BASE
ANODICALLY CODEPOSITING COATED FRIT AND ANIONIC RESIN UPON AN ELECTRICALLY CONDUCTIVE SUBSTRATE
FIRING THE COATED SUBSTRATE

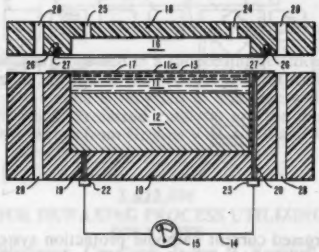
An improved method is provided for electrodepositing particulate ceramic frit upon an electrically conductive substrate which comprises enveloping the frit particles in a double envelope consisting of an inner coating of anionic resin and an outer coating of cationic resin, forming an aqueous dispersion of the thus-coated frit and an anionic binder resin, and anodically depositing the coated frit and the anionic binder resin upon the substrate. The coated substrate can then be fired to volatilize and drive off all resinous material and convert the electrodeposited frit particles into a continuous film.

3,622,487

APPARATUS FOR MEASURING NITROGEN OXIDE CONCENTRATIONS

Ramesh Chand, and Manuel Shaw, both of Los Angeles, Calif., assignors to Dynasciences Corporation, Los Angeles, Calif.

Filed Sept. 9, 1968, Ser. No. 758,351
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 **6 Claims**



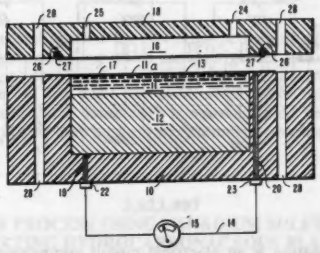
Nitrogen oxide concentrations present in a gaseous mixture are rapidly and continuously monitored by measuring the current passing between an inert metallic sensing electrode and a counter electrode which electrodes are in contact with an aqueous electrolyte solution and at which sensing electrode the oxides are electrooxidized. The sensing electrode is composed of an inert metal, whereas the counter electrode is composed of an electroactive material which is capable of being electrochemically reduced when electrically interconnected with the sensing presence in the presence of the aqueous electrolyte solution.

3,622,488

APPARATUS FOR MEASURING SULFUR DIOXIDE CONCENTRATIONS

Ramesh Chand, and Manuel Shaw, both of Los Angeles, Calif., assignors to Dynasciences Corporation, Los Angeles, Calif.

Filed Sept. 9, 1968, Ser. No. 758,527
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 **8 Claims**



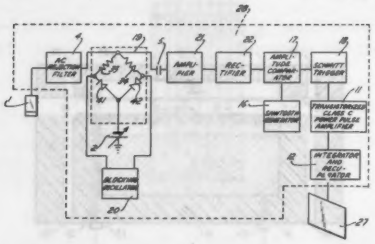
Sulfur dioxide concentrations present in a gaseous mixture are rapidly and continuously monitored by measuring the current passing between an inert metallic sensing electrode and a counter electrode which electrodes are in contact with an aqueous electrolyte solution and at which sensing electrode sulfur dioxide is electrooxidized. The sensing electrode is composed of an inert metal whereas the counter electrode

is composed of an electroactive material which is capable of being electrochemically reduced when electrically interconnected with the sensing electrode in the presence of the aqueous electrolyte solution.

3,622,489
CATHODIC PROTECTION SYSTEM

Valeriu Dumitrescu, Bucharest; Dan Ciulin, Bucharest, and Paun Constantin, Plotesti, all of Romania, assignors to Institutual De Cercetari Si Projectari Pentru Industria Extractiva De Titei Si Gaze

Continuation-in-part of application Ser. No. 401,476, Oct. 5, 1964, now abandoned. This application Sept. 25, 1968, Ser. No. 763,055
Int. Cl. C23f *13/00*
U.S. Cl. 204—196 **5 Claims**

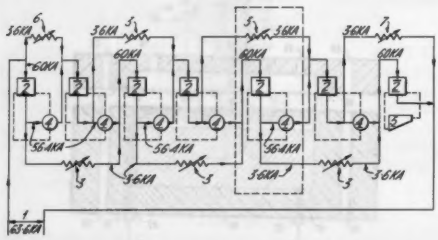


An impressed-current cathodic protection system for use with a relatively high impedance electrolyte such as moist earth employs Zener diodes operated below their breakdown voltage to establish a high input impedance for the circuitry that controls the current output to the system anode. The latter output is obtained by integrating and recuperating a sequence of high frequency, high duty factor pulses that are modulated in duration in accordance with the deviation of the output of a reference half-cell, which senses the potential on the object to be protected, from a desired potential indicative of the desired protection level.

3,622,490
ELECTRICAL CIRCUIT

Michael James Lockett, Goostrey, Holmes Chapel, England, assignor to Murgatroyd's Salt and Chemical Company Limited, Elworth, Sandbach, England

Filed Mar. 20, 1969, Ser. No. 808,789
Claims priority, application Great Britain, Mar. 29, 1968, 15,347/68
Int. Cl. C22d *1/04*; B01k *3/00*
U.S. Cl. 204—220 **3 Claims**

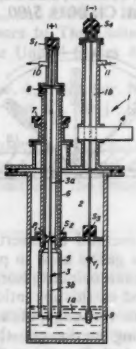


The invention is an electrical circuit comprising a source of DC power, a plurality of electrolytic cells in which mercury is used as the cathode, and a plurality of fuel cells. The electrolytic cells and fuel cells are connected alternately and electrically in series and a shunt is provided from the cathode of each of the electrolytic cells to the anode of the next but one electrolytic cell. Amalgam produced in the electrolytic cells is used as fuel in the fuel cells to reduce total energy requirements.

3,622,491
ELECTROLYTIC APPARATUS FOR MOLTEN SALT ELECTROLYSIS

Morton M. Wong, Reno, and George M. Marginez, Henderson, both of Nev., assignors to The United States of America as represented by the Secretary of the Interior

Filed Apr. 23, 1969, Ser. No. 818,508
Int. Cl. B01k *3/00*; C22d *3/02*
U.S. Cl. 204—225 **8 Claims**

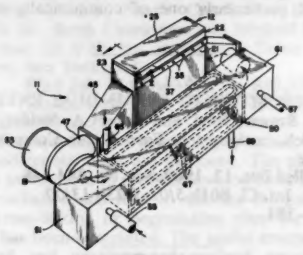


In an electrolytic cell a vertically movable hood is provided to capture corrosive gases evolving from the molten electrolyte at the anode. The hood is electrically conductive and can be lowered into the electrolyte and connected up as an anode which surrounds the cathode, or the hood can be completely removed from the electrolyte during, for example, an electrorefining operation.

3,622,492
OZONE GENERATOR

Layton C. Kinney, Chicago, Ill., assignor to IIT Research Institute, Chicago, Ill.

Filed Dec. 18, 1968, Ser. No. 784,822
Int. Cl. C22d *7/08*
U.S. Cl. 204—322 **7 Claims**



To provide a compact ozone generator, films of polymeric material are employed as dielectrics in combination with flat, planar electrodes to produce ozone by silient electrical discharge in an oxygen containing gas stream. The electrodes and dielectrics are cooled by the gas stream which is recycled across the electrodes and dielectrics and through an external heat exchanger.

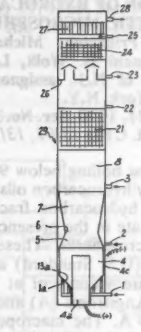
3,622,493
USE OF PLASMA TORCH TO PROMOTE CHEMICAL REACTIONS

Francois A. Crusco, 9, Sente des Ruelles, 78 Villiers-Saint-Frederic, France

Filed Dec. 30, 1968, Ser. No. 787,770
Claims priority, application France, Jan. 8, 1968, 135,164 Dec. 13, 1968, 178, 161
Int. Cl. C22d *7/08*
U.S. Cl. 204—323 **5 Claims**

Chemical reactions, particularly the production of acetylene, are achieved by mixing a hydrocarbon material

with a gas-carrying plasma torch issued from an electric arc, and allowing them to react in gaseous phase under a superatmospheric pressure under high turbulence. Preferably the



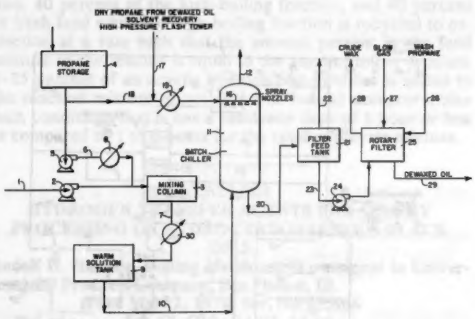
gases thus formed are quenched and washed with liquid hydrocarbons in such a way that washing liquid refluxes into the zone in which the reaction takes place.

3,622,494

SPRAYING COLD MAKEUP PROPANE INTO VAPOR SPACE OF DEWAXING CHILLER

James D. Bushnell, Berkeley Heights; Richard K. Neeld, Plainfield, and Roy J. Lamm, Chester, all of N.J., assignors to Esso Research and Engineering Company

Filed Apr. 1, 1970, Ser. No. 24,529
Int. Cl. C01g *43/08*
U.S. Cl. 208—35 **5 Claims**



Cold makeup liquid normally gaseous dewaxing solvent is introduced directly into the chiller of a dewaxing plant by spraying it into the vapor space of the chiller in droplets having a size between 1,000 and 6,000 microns, which are rapidly heated by the ascending solvent vapors from the liquid solvent in the chiller thus preventing shock chilling.

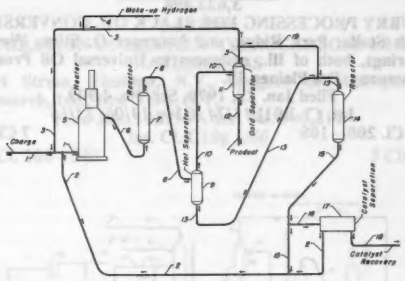
3,622,495

MULTIPLE-STAGE SLURRY PROCESSING FOR BLACK OIL CONVERSION

John G. Gatsis, Des Plaines, and William K. T. Gleim, Island Lake, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 22, 1970, Ser. No. 4,807
Int. Cl. B01j *11/74*; C10g *13/06, 23/16*
U.S. Cl. 208—59 **6 Claims**

A catalytic slurry process for effecting the conversion of a hydrocarbonaceous charge stock containing asphaltenes, metallic contaminants and excessive quantities of sulfurous compounds. The slurry constitutes the charge stock, hydrogen and from about 1.0 percent to about 25.0 percent by weight of finely divided catalyst particles. The charge stock is converted by processing the slurry in at least two individual reaction zones having separation facilities therebetween. That portion of the first reaction zone product effluent containing the catalyst particles and unconverted



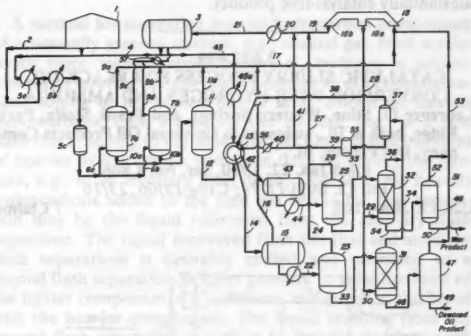
nondistillables is processed in a succeeding reaction zone. At least the major portion of the product effluent from the succeeding reaction zone is recycled to combine with the fesh feed charge stock. Preferred catalysts are the unsupported sulfides of the metals from Groups V–B, VI–B and VIII.

3,622,496

LOW-POUR DEWAXING PROCESS UTILIZING DUAL SOLVENTS

Frank A. Biribauer, Cranford; James D. Bushnell, Berkeley Heights, and Richard E. Winsor, Fanwood, all of N.J., assignors to Esso Research and Engineering Company

Filed Dec. 4, 1969, Ser. No. 882,025
Int. Cl. C01g *43/08*
U.S. Cl. 208—35 **12 Claims**



An improved process for dewaxing petroleum oil stocks. A dual solvent consisting of an autorefrigerant and a wax antisolvent is employed to chill the petroleum oil and precipitate out the wax. The autorefrigerant is used to strip the wax antisolvent from both the precipitated wax and the dewaxed oil and may be used additionally as blow gas for the filters.

3,622,497

SLURRY PROCESS USING VANADIUM SULFIDE FOR CONVERTING HYDROCARBONACEOUS BLACK OIL

William K. T. Gleim, Island Lake, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 22, 1970, Ser. No. 5,091
Int. Cl. B01j *11/74*; C10g *13/06, 23/16*
U.S. Cl. 208—108 **7 Claims**

A catalytic slurry process for hydrorefining a hydrocarbonaceous charge stock containing hydrocarbon-insoluble asphaltenes. The process is effected in slurry fashion with the

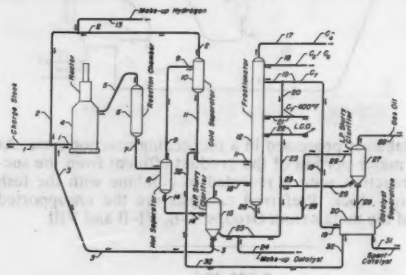
charge stock being admixed with a phenolic solution of a tetravalent vanadium salt. The slurry is reacted at conditions including a temperature above about 225° C. and a pressure greater than about 500 p.s.i.g., and in the presence of hydrogen and hydrogen sulfide.

3,622,498

SLURRY PROCESSING FOR BLACK OIL CONVERSION

Frank Stolfa, Park Ridge, and Laurence O. Stine, Western Springs, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 22, 1970, Ser. No. 4,909
Int. Cl. B01j *11/74*; **C10g** *13/06, 23/16*
U.S. Cl. 208—108 **7 Claims**



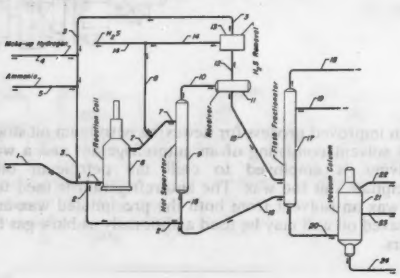
A catalytic slurry process for effecting the conversion of a hydrocarbonaceous charge stock containing asphaltenes and metallic contaminants. The slurry constitutes the charge stock, hydrogen, a portion of the previously produced product effluent and from about 1.0 to about 25.0 percent by weight of finely divided catalyst particles. Preferred catalysts are the unsupported sulfides of the metals from Groups V-B, VI-B and VIII. A series of product separation steps facilitates catalyst circulation, catalyst withdrawal, and recovery of a substantially catalyst-free product.

3,622,499

CATALYTIC SLURRY PROCESS FOR BLACK OIL CONVERSION WITH HYDROGEN AND AMMONIA

Laurence O. Stine, Western Springs, and Frank Stolfa, Park Ridge, both of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Jan. 22, 1970, Ser. No. 4,806
Int. Cl. B01j *11/74*; **C10g** *13/06, 23/16*
U.S. Cl. 208—108 **7 Claims**



A catalytic slurry process for effecting the conversion of a hydrocarbonaceous charge stock containing asphaltenes and metallic contaminants. The slurry constitutes charge stock, hydrogen, from about 1.0 to about 25.0 percent by weight of finely divided catalyst particles and, in a preferred embodiment, a portion of the previously produced product effluent. Preferred catalysts are the unsupported sulfides of the metals from Groups V-B, VI-B and VIII. Prior to an initial separation, hydrogen sulfide is commingled with the product effluent in order to convert the metals contained therein to the sulfides thereof.

3,622,500

HYDROGENATION OF HYDROCARBONS WITH CATALYTIC MICROSPHERES

Seymour B. Alpert, Princeton; Michael C. Chervenak, Pennington, and Ronald H. Wolk, Lawrence Township, Mercer County, all of N.J., assignors to Hydrocarbon Research, Inc., New York, N.Y.

Filed Apr. 21, 1970, Ser. No. 30,431
Int. Cl. C10g *13/02, 13/18*
U.S. Cl. 208—111 **5 Claims**

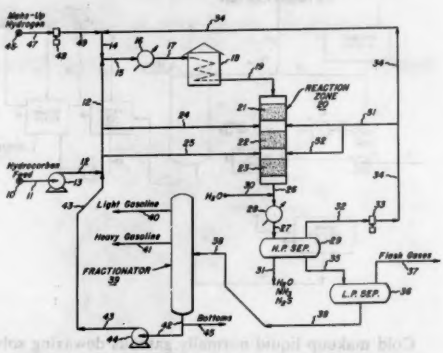
Hydrocarbon fractions boiling below 975° F. are obtained by hydrocracking heavy hydrocarbon oils, containing 40–100 percent by volume of hydrocarbon fractions boiling above 975° F., in the liquid state in the presence of ebullated catalytic macroporous microspheres. These microspheres are smaller than 60 mesh (U.S. Standard) and larger than 325 mesh. They have a pore volume of at least 0.10 cc./g. in pores larger than 250 Angstroms (A) and at least 0.30 cc./g. in pores less than 250 A. The macroporous, microspheres have an average size such that 80 weight percent fall within a narrow size range and are ebullated by the upward flow of oil and hydrogen through the reactor during hydroconversion. The pore volume of the microspheres is critical as there must be a penetration of the hydrocarbon oil into the catalyst for at least a 3 percent gain in weight.

3,622,501

CATALYST AND HYDROCARBON PROCESSES EMPLOYING SAME

Ralph J. Bertolacini, Chesterton, and Louis C. Gutberlet, Crown Point, both of Ind., assignors to Standard Oil Company, Chicago, Ill.

Filed Apr. 10, 1969, Ser. No. 815,063
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 **14 Claims**



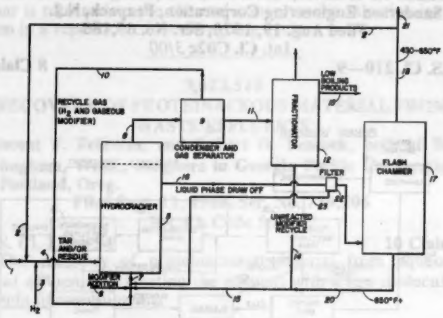
The catalyst comprises Group VIA and Group VIII metals and/or their compounds and an acidic support comprising large-pore crystalline aluminosilicate material and a large-pore-diameter alumina having a surface area within the range of about 150 to about 500 square meters per gram and an average pore diameter within the range of about 80 to about 200 Angstroms. Preferred Group VIA metals are molybdenum and tungsten. Preferred Group VIII metals are cobalt and nickel. The preferred large-pore crystalline aluminosilicate material is ultrastable, large-pore crystalline aluminosilicate material.

The processes are hydrocarbon conversion processes, a typical example of which is a hydrocracking process. The hydrocracking process comprises contacting in a hydrocracking reaction zone under hydrocracking conditions and in the presence of hydrogen petroleum hydrocarbon fractions with the catalyst of the present invention.

3,622,502
CRACKING HYDROCARBON RESIDUA

Ralph B. Mason, Denham Springs, and Glen P. Hamner, Baton Rouge, both of La., assignors to Esso Research and Engineering Company

Filed July 11, 1969, Ser. No. 840,985
Int. Cl. C10g *13/02*
U.S. Cl. 208—112 **10 Claims**

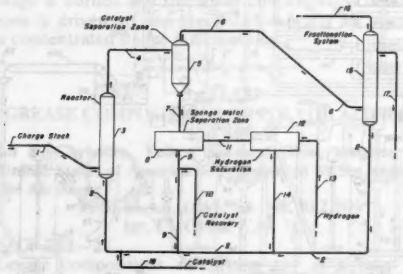


Hydrocarbon residua boiling mostly 1,000° F. and above are catalytically hydrocracked under liquid phase conditions and novel recycle ratios to obtain a product which is predominantly an aromatic gas oil which is eminently suitable either as a solvent or as feed to commercial hydrocracking operations. Although the upper boiling limit of this gas oil may be in the range of 600°–800° F., the process is illustrated with separation into fractions boiling 650° F.− and 650° F.+. An amount of the low-boiling and high-boiling fractions are recycled so that the feed mixture to the reaction zone contains 20 percent of the low-boiling fraction, 40 percent of the high-boiling fraction, and 40 percent of fresh feed while the high-boiling fraction is recycled to extinction at a rate such that the amount present in the feed mixture to the reactor is equal to the amount in the product. 1–25 percent of an acyclic hydrocarbon modifier is added to the reaction mixture to act as a free radical acceptor under such conditions that is has a residence time of 1 hour or less as compared to 1 to 6 hours for the residua-recycle mixture.

3,622,503
HYDROGEN TRANSFER AGENTS FOR SLURRY PROCESSING OF HYDROCARBONACEOUS BLACK OILS

Rudolf H. Hausler, Rolling Meadows, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 2, 1970, Ser. No. 15,666
Int. Cl. C10g *23/02*, *23/06*
U.S. Cl. 208—215 **12 Claims**

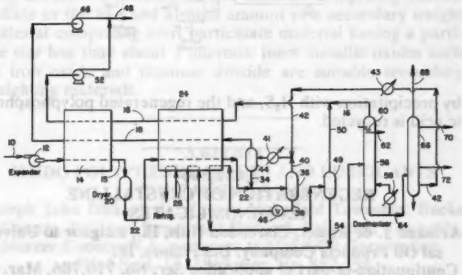


Asphaltene-containing hydrocarbonaceous black oils are hydrogenated in a slurry process utilizing a hydrogen transfer agent. The transfer agent constitutes a finely divided sponge metal, saturated with hydrogen at elevated pressure, and admixed with the charge stock to form a reactive slurry. Preferred sponge metals include titanium, zirconium, vanadium, tungsten and nickel. In a specific embodiment, the reactive slurry also contains a hydrorefining catalyst of an unsupported sulfide of a Group V-B metal.

3,622,504
SEPARATION OF HEAVIER HYDROCARBONS FROM NATURAL GAS

Albert Strum, Flushing, N.Y., assignor to Hydrocarbon Research, Inc., New York, N.Y.

Filed Jan. 10, 1969, Ser. No. 790,211
Int. Cl. C10g *5/00*
U.S. Cl. 208—340 **3 Claims**



A method for separating heavier hydrocarbon components of a normally gaseous mixture, e.g., natural gas, from a relatively more volatile component, e.g., methane is accomplished by cooling the gas under pressure to effect condensation, adding to the cooled feed a small amount of heavier hydrocarbons, flash separating the mixture, e.g., in a first flash drum, adding to the separated gas phase a small amount of heavier hydrocarbons, and again flash separating the mixture, e.g., in an auxiliary flash drum. Desirably, the heavier hydrocarbons added to the feed gas before the first separation may be the liquid recovered from the auxiliary flash separation. The liquid recovered from the first and auxiliary flash separations is desirably chilled and subjected to a second flash separation at lower pressure to volatilize most of the lighter component, e.g., methane, recovered in the liquid with the heavier components. The liquid resulting from the second flash separation may then be fractionated into such components as ethane, propane, butane and gasoline. The methane-containing gasiform phases from the auxiliary and second flash separations are desirably combined with the fractionated ethane and supplied as the treated natural gas product.

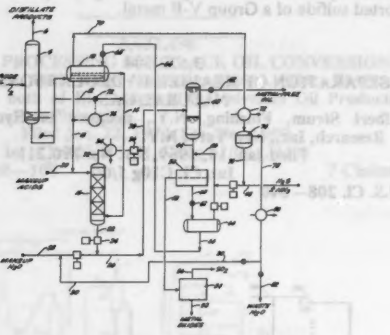
3,622,505
DEMETALLIZATION OF RESIDUAL OILS WITH POLYPHOSPHORIC ACIDS

George L. Tilley, and Donald C. Young, both of Fullerton, Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 24, 1969, Ser. No. 887,991
Int. Cl. C10g *17/00*
U.S. Cl. 208—252 **12 Claims**

Crude oil residua containing normally incident organometallic impurities, e.g., vanadium and nickel porphyrins, are subjected to extraction with anhydrous liquid polyphosphoric acid at elevated temperatures, whereby the metals in the oil are extracted into the acid phase in the form

of metal chelates of the linear polyphosphoric acids. In a cyclic process, the extracted metals are recovered as sulfides



by precipitation with H_2S, and the regenerated polyphosphoric acid is recycled.

3,622,506
REGENERATION OF CRYSTALLINE ALUMINOSILICATES

Armand J. de Rosset, Clarendon Hills, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

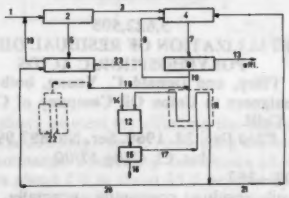
Continuation-in-part of application Ser. No. 710,786, Mar. 6, 1968, now abandoned , which is a continuation-in-part of application Ser. No. 449,282, Apr. 19, 1965, now abandoned. This application June 27, 1969, Ser. No. 837,315
Int. Cl. C07c 7/12
U.S. Cl. 208—310 **9 Claims**

A method for effecting the regeneration of crystalline aluminosilicates which have become deactivated in an adsorption process as a result of the retention therein of high molecular weight polar organic contaminants. Conditions of temperature and pressure are controlled such that regeneration is effected in a liquid-phase system. A mixed liquid regenerant of water and an organic solvent having molecular dimensions such that said organic solvent is not adsorbed within the pores of the adsorbent is employed. The flow rate of the liquid regenerant is controlled to maintain the contacting temperature below a level of about 150° C.

3,622,507
ACTIVATED SLUDGE PROCESSING

Aale Pasveer, The Hague, Netherlands, assignor to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van De Volksgezonheid, The Hague, Netherlands

Filed July 17, 1970, Ser. No. 55,917
Claims priority, application Netherlands, July 23, 1969, 6,911,263
Int. Cl. C02c 1/02
U.S. Cl. 210—6 **4 Claims**

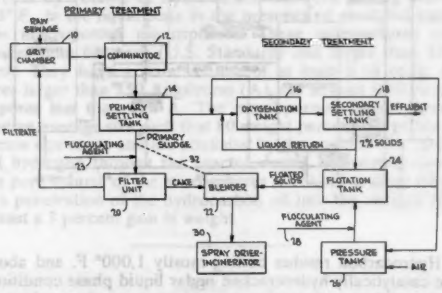


A method is shown for partly decomposing the surplus "activated sludge" from sewage purification plants. The activated sludge is made alkaline and heat treated between 90° and 180° C. An easily separable residue is separated and the remaining solution containing a large part of the decomposed organic matter of the original sludge is recycled into the activated sludge process. A treatment plant is described more in detail.

3,622,508
SLUDGE DISPOSAL

Thomas R. Komline, Gladstone, N.J., assignor to Komline-Sanderson Engineering Corporation, Peapack, N.J.

Filed Aug. 19, 1970, Ser. No. 65,185
Int. Cl. C02c 3/00
U.S. Cl. 210—9 **8 Claims**

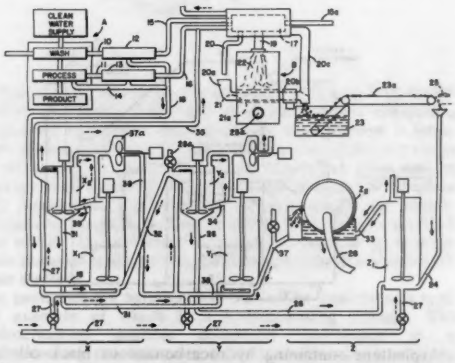


Sewage is subjected in sequence to primary and secondary treatment to derive separately therefrom a primary sludge formed of heavier solids and a secondary sludge formed of relatively lighter solids. The primary sludge is concentrated by filtering to form a comparatively dry filter cake, and the secondary sludge is delivered into a flotation tank, together with a pressurized solution of air and water, so that air bubbles released incident to the reduction of pressure attach to the agglomerated sludge particles and float them to the surface of the body of liquid within the tank. The floating blanket of sludge is removed from the tank and blended with the filter cake to form a substantially homogeneous liquid slurry which is then spray-dried and incinerated.

3,622,509
MECHANISM AND METHOD FOR A CHAR-RECYCLING COUNTERFLOW WATER CLARIFIER

Amos J. Shaler, 708 W. Park Ave., State College, Pa., and Daniel C. McLean, Elm Street, Lemont, Pa.

Filed July 24, 1969, Ser. No. 844,311
Int. Cl. B01d 15/02, 15/06
U.S. Cl. 210—32 **13 Claims**



Solid, combustible waste material, all or part of which may comprise particles removed from polluted water, is divided

into two portions, one of which portions is burned in a thermal converter having a char-forming passage therein, while the other portion is formed into char in the char-forming passage. The char thus formed is mixed with the polluted water and the water-char mixture is agitated, preferably by gases from the thermal converter and char-forming passage, to cause adsorption by the char of pollutants in the water and agitating gases. The clarified water is separated from the spent char with its adsorbed load of pollutants, and the spent char is returned to the thermal converter for selective inclusion in a repetition of the foregoing cycle.

3,622,510

RECOVERY OF PROTEINACEOUS MATERIAL FROM WASTE EFFLUENTS

Vincent F. Felicetta, and Robert O. Peacock, both of Bellingham, Wash., assignors to Georgia Pacific Corporation, Portland, Oreg.

Filed Sept. 11, 1968, Ser. No. 759,206
Int. Cl. C02c *5/02*
U.S. Cl. 210—54 **10 Claims**

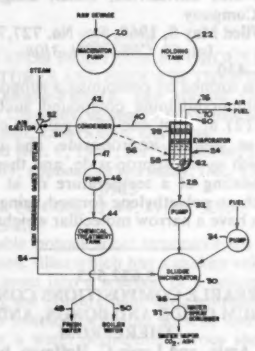
The recovery of proteinaceous material from aqueous plant effluents by treating the effluent with a low molecular weight lignosulfonate.

3,622,511

SEWAGE TREATMENT SYSTEM

James J. Pizzo, and Malcolm F. McNeil, both of San Jose, Calif., assignors to FMC Corporation, San Jose, Calif.

Filed Sept. 14, 1970, Ser. No. 71,710
Int. Cl. C02c *1/00*
U.S. Cl. 210—62 **8 Claims**



A compact mechanical system for treating sewage in which the raw sewage is macerated and supplied to an evaporator that employs a submersible burner wherein some of the sewage is burned and the solids concentration is increased. Steam is driven off and recovered as water for reuse while the concentrated sludge is incinerated.

3,622,512

GREASE COMPOSITIONS OF POLYOL ALIPHATIC ESTERS

John B. Christian, Yellow Springs, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force

Filed May 6, 1969, Ser. No. 822,309
Int. Cl. C10m *7/36, 7/24*
U.S. Cl. 252—21 **5 Claims**

Grease compositions comprising (1) as a base fluid a polyol aliphatic ester and (2) as a thickener finely divided sodium montmorillonite clay. The clay may be used as the sole thickener or it may be used in combination with a finely divided fluorinated ethylenepropylene copolymer. Also, molybdenum disulfide or antimony dialkyldithiocarbamate may be added to the compositions. The compositions have both good wear characteristics and good extreme pressure characteristics at temperatures in the −65° F. to 350° F. range. The grease compositions are useful in heavily loaded airframe bearings, screw jack actuators, journal bearings, and in other applications where there is sliding, rolling, oscillating, or other forms of motion where wear and extreme pressure are factors.

3,622,513

OIL BASE FLUID COMPOSITION

George Miller, Houston, Tex., assignor to Oil Base, Inc., Houston, Tex.

Filed May 10, 1968, Ser. No. 728,331
Int. Cl. C10m *1/10, 1/24, 1/16*
U.S. Cl. 252—8.5 M **4 Claims**

An oil base drilling fluid having very low oil fluid loss even under extreme conditions of borehole temperature and pressure contains a primary weight material comprising barium sulfate or the like and a small amount of a secondary weight material comprising inert particulate material having a particle size less than about 3 microns. Inert metallic oxides such as iron oxide and titanium dioxide are suitable secondary weighting materials.

3,622,514

IMIDO POLYPHENYL OXIDES AND LUBRICANTS CONTAINING SAME

Joseph John Dickert, Jr., Lower Makefield Township, Bucks County, Pa., and Israel Joel Heilweil, Princeton Township, Mercer County, N.J., assignors to Mobil Oil Corporation

Filed Sept. 12, 1969, Ser. No. 857,591
Int. Cl. C10m *1/42, 1/36*
U.S. Cl. 252—47.5 **9 Claims**

This invention provides compounds having a diphenyl ether or a polyphenyl ether moiety between terminal imide structures, as well as lubricant compositions containing same. The new compounds impart extreme pressure, detergency, and antioxidant properties to the lubricant.

3,622,515

ELECTROPHOTOGRAPHIC LIQUID DEVELOPER HAVING A PROTEOLYTIC ENZYME

Yasuo Tamai; Seiichi Taguchi, and Satoru Honjo, all of Asaka-shi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 25, 1969, Ser. No. 819,324
Claims priority, application Japan, Apr. 25, 1968, 43/27900
Int. Cl. G03g *9/04*
U.S. Cl. 252—62.1 **5 Claims**

An electrophotographic liquid developer useful in converting an electrostatic latent image formed on an insulating surface into a visible or material image, comprising a nonpolar, highly insulating carrier liquid and a toner powder which contains therein or absorbs a finely divided proteolytic enzyme, or consists of a finely divided proteolytic enzyme, having a suitable polarity of charge dispersed in said carrier liquid.

3,622,516

BUILT-SOAP MANUFACTURING PROCESS

Chung Yu Shen, St. Louis, Mo.; Norman Earl Stahlheber, Columbia, Ill., and Ronald E. Walters, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Oct. 6, 1967, Ser. No. 673,290
Int. Cl. C11d *9/14, 11/00, 13/00*
U.S. Cl. 252—109 **1 Claim**

A process for manufacturing a built soap product comprising saponifying fatty acids or glycerides in the presence of

water and excess caustic and adding to the resulting mixture an amount of alkali metal trimetaphosphate sufficient to react with the excess caustic and thereafter drying the mixutre to produce a detergent product which is substantially free of caustic and which contains soap and tripolyphosphate.

3,622,517

SYNTHETIC DETERGENT COMPOSITIONS

Charles J. Norton, Denver, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Mar. 6, 1968, Ser. No. 710,777
Int. Cl. C11d *1/12*
U.S. Cl. 252—554 6 Claims

A synthetic detergent composition having particular utility in the making of synthetic detergent bars comprising a major proportion of primary alkane sulfonates derived predominantly from alpha-olefins containing from 11 to 20 carbon atoms, especially 18 to 20 carbon atoms, and minor amounts, each, of the following: (a) at least one water-soluble inorganic salt, (b) a plasticizing and/or binding agent such as a higher molecular weight alcohol, a higher molecular weight fatty acid, or a polyhydric alcohol, or mixtures thereof, and (c) a mineral oil which is substantially free of alkanes containing less than 17 carbon atoms. The mineral oil component most advantageously is obtained from the unreacted alkanes carried over from the sulfitation of the alpha-olefins.

3,622,518

WATER-IN-OIL INVERT EMULSIONS

James G. Atherton, Roselle, and Harold C. Nemeth, Chicago, both of Ill., assignors to Armour Industrial Chemical Company, Chicago, Ill.

Filed Sept. 27, 1968, Ser. No. 763,379
Int. Cl. B01j *13/00*
U.S. Cl. 252—309 10 Claims

Invert emulsions containing arylaliphatic acid salts of alkoxylated arylaliphatic amines.

3,622,519

GASOLINE, DIESEL FUEL OR ANTIKNOCK FLUIDS CONTAINING AN EXHAUST EMISSION REDUCING ADDITIVE

Henry G. Braxton, Jr., Franklin Village, Mich., assignor to Ethyl Corporation, New York, N.Y.

Original application Feb. 27, 1967, Ser. No. 619,003, now Patent No. 3,547,958. Divided and this application Mar. 13, 1970, Ser. No. 19,465
Int. Cl. C09k *3/00*; C10l *1/18*
U.S. Cl. 252—386 16 Claims

Mono- and di-alkanoates, aralkanoates and benzoates of benzylidene bisphenols reduce combustion chamber deposit formation and exhaust hydrocarbon emission increase of internal combustion engines.

3,622,520

REGENERATION OF A COKE-DEACTIVATED CATALYST COMPRISING A COMBINATION OF PLATINUM, RHENIUM, HALOGEN AND SULFUR WITH AN ALUMINA CARRIER MATERIAL

John C. Hayes, Palatine, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of application Ser. No. 805,380, Mar. 7, 1969. This application July 23, 1969, Ser. No. 844,200
Int. Cl. C10g *35/06*; B01j *11/02*
U.S. Cl. 252—415 12 Claims

A deactivated hydrocarbon conversion catalyst, which is a combination of a platinum group component, a rhenium component, a halogen component, and a sulfur component with an alumina carrier material and which has been deactivated by deposition of carbonaceous material thereon during a previous contacting with a hydrocarbon charge stock at hydrocarbon conversion conditions, is regenerated by the sequential steps of: (1) stripping the sulfur therefrom by contacting with a first gaseous mixture comprising hydrogen, H_2O, and HCl; (2) purging hydrogen from contact with the catalyst with an inert gas stream; (3) burning carbon from the resulting catalyst at a relatively low temperature with a substantially sulfur-free second gaseous mixture containing relatively small amounts of oxygen, H_2O, and HCl; (4) treating the resulting catalyst with the second gaseous mixture at a relatively high temperature; (5) purging oxygen from contact with the catalyst with an inert gas stream; and (6) reducing the resulting catalyst by contacting with a substantially sulfur-free third gaseous mixture comprising hydrogen, H_2O, and HCl. Key feature of the subject regeneration method involves the use of both H_2O and HCl in the gaseous mixtures used in the four major steps thereof (i.e., steps (1), (3), (4), and (6)). Furthermore, in all of these steps the mole ratio of H_2O to HCl in the gas streams is maintained at a value selected from the range of about 20:1 to about 100:1.

3,622,521

OLEFIN POLYMERIZATION WITH CHROMIUM AND TITANIUM-CONTAINING COMPOUNDS

John P. Hogan, and Donald R. Witt, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Aug. 21, 1967, Ser. No. 661,846
Int. Cl. C08f *1/66*, *3/06*
U.S. Cl. 252—430 9 Claims

Catalyst formed by first adding to a support a chromium-containing compound using an aqueous medium and then adding a titanium-containing compound using a nonaqueous medium.

3,622,522

POLYMERIZATION CATALYST

Bertalan Horvath, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed May 8, 1968, Ser. No. 727,706
Int. Cl. C08d *3/04*, *3/08*
U.S. Cl. 252—430 7 Claims

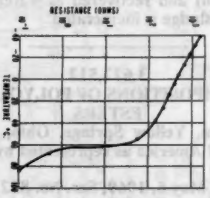
A catalyst is formed by combining a support material with (1) a chromium-containing compound such as chromium trioxide and (2) at least one of a gallium-containing compound such as gallium isopropoxide, and a tin-containing compound such as tin isopropoxide, and then activating the catalyst by heating at a temperature of at least 1,700° F. Polymers such as polyethylene formed using the catalyst of this invention have a narrow molecular weight distribution.

3,622,523

AIR FIREABLE COMPOSITIONS CONTAINING VANADIUM OXIDE AND BORON, AND DEVICES THEREFROM

Rajnikant B. Amin, and Lewis C. Hoffman, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 30, 1969, Ser. No. 872,594
Int. Cl. H01b *1/02*; B44d *1/20*
U.S. Cl. 252—514 13 Claims



Screen printable, air fireable compositions comprising a vanadium glass, boron, and as optional components, noble metal and/or a low melting inorganic binder, wherein the glass contains 5–55 percent vanadium metal content. Various electronic devices are readily made from these compositions.

A unique feature of the devices is their sensitivity to voltage as well as temperature. Consequently, the fired compositions are particularly useful wherever switching devices are needed, e.g., as transient suppressors in electronic equipment.

3,622,524
COMPOSITIONS OF EPOXY RESINS CURED WITH ORGANOTIN COMPOUNDS
Mark Markovitz, and Leo S. Kohn, both of Schenectady, N.Y., assignors to General Electric Company
Filed Sept. 3, 1968, Ser. No. 757,168
Int. Cl. C08g 30/10
U.S. Cl. 260—2 EC 5 Claims

Epoxy resins cured with organotin compounds provide electrical insulation which is characterized by good dissipation factor, high-heat distortion temperature and good corona resistance.

3,622,525
POLYIMIDES AND POLYIMIDE PRECURSORS
Gerald W. Miller, Pittsburgh, Pa., assignor to Mobay Chemical Company, Pittsburgh, Pa.
Continuation-in-part of application Ser. No. 584,645, Oct. 6, 1966, now Patent No. 3,489,696. This application Jan. 26, 1967, Ser. No. 611,815
Int. Cl. C08g 22/44, 22/00
U.S. Cl. 260—2.5 R 9 Claims

Compounds of the class of diaryl sulfones having at least one pair of vicinal carboxylic acid groups on at least one of the aryl groups are reacted with isocyanate to prepare imides and polyimides.

3,622,526
WATER VAPOR PERMEABLE POROUS SHEET STRUCTURES AND PROCESS THEREFOR
Bruno Zorn, Cologne-Flittard, and Harald Oertel, Leverkusen, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Dec. 7, 1967, Ser. No. 688,692
Claims priority, application Germany, Dec. 13, 1966, F 50915
Int. Cl. C08g 22/44, 51/08, 53/08
U.S. Cl. 260—2.5 AK 6 Claims

Water-permeable porous sheet structures are prepared by adding an inorganic filler which has a shaken volume of from 3 to 20 cc. per gram into a solution of a polyurethane urea and then treating the polyurethane-urea solution with a nonsolvent which is miscible with the solvent and shaping the solution to form a water-permeable porous sheet structure with removal of the solvent and the nonsolvent.

3,622,527
MICROPOROUS SHEET AND A PROCESS FOR THE PRODUCTION THEREOF
Dieter Dieterich, Leverkusen; Artur Reischl, Leverkusen, and Harro Witt, Cologne-Buchheim, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany
Filed Apr. 22, 1968, Ser. No. 723,306
Claims priority, application Germany, Apr. 28, 1967, F522761VC/39B
Int. Cl. B29d 27/04, 27/08; C08g 22/00, 22/44
U.S. Cl. 260—2.5 AY 13 Claims

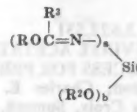
Microporous sheets or molded articles, permeable to water vapor are prepared from sedimenting and redispersible aqueous polyurethanes. The dispersions are in microgel form, the particles having an average minimum diameter of from 2 to 500 microns, preferably 8 to 100 microns. A second component binds the microgel together without impairing the microporosity. The products of the invention are useful as artificial leather in the preparation of raincoats, handbags, belts, shoes, upholstery and also as vibration and sound-damping materials.

3,622,528
POLYETHYLENIMINE FATTY ACID EPICHLOROHYDRIN PRODUCT
Juan Longoria, III, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.
Filed June 13, 1968, Ser. No. 736,556
Int. Cl. C08g 33/08
U.S. Cl. 260—18 9 Claims

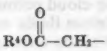
An improved polyethylenimine adduct for cellulosic products is prepared by condensing polyethylenimine with 0.05–0.4 mole of a C_{12}—C_{22} fatty acid and thereafter capping the residual free amino groups by reaction in aqueous solution at 0°–50° C. with epichlorohydrin. The resulting product is an effective softener, sizing agent, and wet-strength additive for paper and other cellulosic products with superior color stability and increased resistance to yellowing.

3,622,529
RTV SILICONE COMPOSITION CONTAINING AN IMIDATOSILANE
Milton L. Evans, Schenectady, N.Y., assignor to General Electric Company
Filed Mar. 14, 1969, Ser. No. 807,417
Int. Cl. C08f 21/04
U.S. Cl. 260—18 S 23 Claims

Composition stable under substantially anhydrous conditions and curable to the solid, elastic state in the presence of moisture which comprises a silanol chain-stopped polydiorganosiloxane in which the organo groups are selected from the group consisting of hydrocarbyl, halohydrocarbyl and cyanoalkyl and an imidatosilane of the formula



wherein R^1 is an organic radical of not more than 18 carbon atoms selected from the group consisting of hydrogen, hydrocarbyl, halohydrocarbyl and cyanoalkyl, R. and R^2 are each organic radicals of not more than 18 carbon atoms selected from the group consisting of hydrocarbyl, halohydrocarbyl, nitrohydrocarbyl and alkoxyhydrocarbyl, R^3 is an organic radical of not more than 18 carbon atoms selected from the group consisting of hydrogen, hydrocarbyl, halohydrocarbyl, nitrohydrocarbyl, alkoxyhydrocarbyl, dialkylamino and



wherein R^4 is an organic radical selected from the group consisting of aliphatic hydrocarbyl, aliphatic halohydrocarbyl, aliphatic nitrohydrocarbyl, and

wherein R^5 and R^6 are each aliphatic hydrocarbyl, *a* is an integer of 2 to 4, inclusive, *b* is an integer of 0 to 2, inclusive, *d* is an integer of 0 to 1, and the sum of *a*, *b* and *d* is 4.

3,622,530

TEXTILE FIBERS, FILMS, SHAPED ARTICLES AND THE LIKE PARTICULARLY STABLE TO HEAT, LIGHT AND AGEING

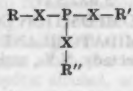
Millo Branchesi, Terni, Italy, assignor to Montecatini Edison S.p.A., Milan, Italy

Filed Mar. 4, 1968, Ser. No. 709,907
Claims priority, application Italy, Mar. 7, 1967, 13,414 A/67
Int. Cl. C08f *45/58, 45/60, 45/62*
U.S. Cl. 260—23 S 7 Claims

Stabilized poly-alpha-olefin compositions comprising polymer and up to 5 percent by weight thereof of stabilizing mixture of:

a. a thioester derived from thiodipropionic acid or from bis-β-hydroxyethyl sulfide (thiodiglycol);

b. a phosphite having the formula:



wherein X is oxygen or sulfur and R, R′, R″ are the same or different radicals selected from the group consisting of unsubstituted or hydroxy substituted alkyl, aryl and alkylaryl radicals;

c. a phenolic antioxidizing agent;

d. an organotin compound;

e. a metallic soap, selected from the group consisting of the stearates of Ca, Mg and the like; and optionally a basic nitrogen containing polymer.

3,622,531

STABLE AQUEOUS VINYL ACETATE POLYMER EMULSIONS AND PROCESS FOR PREPARING SAME

Alio J. Buselli, Livingston; Charles E. Blades, Berkeley Heights; Louise Speers Croix, Summit, N.J., and Sidney Ariemma, Fishkill, N.Y., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation of application Ser. No. 583,623, May 9, 1956, now abandoned. This application Dec. 28, 1961, Ser. No. 162,981
Int. Cl. C08f *1/13, 3/56*
U.S. Cl. 260—29.6 21 Claims

There are disclosed vinyl ester polymer emulsions containing at least two nonionic, polyoxyethylene condensate emulsifying agents, at least one of which is relatively hydrophillic and at least one of which is relatively hydrophobic. Prior to polymerization the monomer emulsion is homogenized, preferably in contact with an emulsion polymerization catalyst. The hydrophillic, nonionic emulsifying agents have a cloud point above about 190° F. while the hydrophobic, nonionic emulsifying agents have a cloud point between about 80° and 160° F. The cloud points are determined in a 1 percent aqueous solution.

3,622,532

CROSS-LINKABLE HOMO- AND COPOLYMERS

Gunter Kolb, Cologne, Stammheim, and Gerhard Balle, Cologne, Flittard, both of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 13, 1969, Ser. No. 824,306
Claims priority, application Germany, June 7, 1968, P 17 70 592.9
Int. Cl. C08f *37/14, 37/04, 37/00*
U.S. Cl. 260—29.6 H 2 Claims

Cross-linked homopolymers and copolymers based on α, β-unsaturated acylaminomethylene carbamic acid esters, their utility as binders for pigments, fleeces and textile materials, as paper auxiliaries and as coating agents and process of producing the same by radical polymerization.

3,622,533

POLYACRYLAMIDE GELS CONTAINING LATENT THERMAL DEGRADATION INHIBITOR

Michael Niall Desmond O'Connor, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 664,247, Aug. 30, 1967, now abandoned. This application Nov. 21, 1969, Ser. No. 878,883
Int. Cl. C08f *29/00*
U.S. Cl. 260—29.6 N 11 Claims

Cyanamide, guanidine, succinimide, and urea inhibit the cross-linking of polyacrylamide without inhibiting the reaction or reactions by which monomeric acrylamide is converted to nontoxic form when aqueous gels containing a final polymer predominately or wholly composed of acrylamide residues and containing a final polymerization catalyst is heated at temperatures above 70° C. until apparently dry.

3,622,534

GELLED ELASTOMER COMPOSITIONS

Robert D. Timmons, Tinley Park, and Roy J. Betty, Jr., Chicago, both of Ill., assignors to Armour Industrial Chemical Company, Chicago, Ill.

Filed June 27, 1968, Ser. No. 740,786
Int. Cl. C08d *9/00*
U.S. Cl. 260—32.8 A 16 Claims

Thickened elastomer compositions comprising a synthetic elastomer such as butyl or neoprene rubber, elastomeric solvent such as textile spirits and a di-substituted urea such as that formed by the in situ reaction of a long chain aliphatic amine and isocyanate, which are useful as rubber adhesives, sealants, and coatings.

3,622,535

PROCESS FOR PREPARING MINERAL REINFORCED POLYLACTAM COMPOSITIONS

Robert Z. Greenley, St. Louis, and Jerry M. Sugerman, Clayton, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Jan. 27, 1969, Ser. No. 794,386
Int. Cl. C08g *20/18, 51/04;* C09c *3/00*
U.S. Cl. 260—37 N 15 Claims

Improved lactam slurries containing a major amount of a mineral reinforcing agent suitable for conversion to a reinforced polylactam composition by the initiated, anionic polymerization process and essentially containing an effective amount of from about 0.1 to about 1.0 weight percent, based on the mineral, of an adduct prepared by the reaction of (1) a higher alkylbenzenesulfonic acid, wherein the alkyl group contains from nine to 15 carbon atoms, with (2) an ω-aminoalkylenetrialkoxysilane, wherein the alkylene group contains from two to 10 carbon atoms and each of the alkoxy groups contain from one to three carbon atoms. The presence of said adduct acts as a fluidifying agent to provide a lower viscosity slurry at a given mineral concentration enabling better filling of molds in the cast-polymerization process and/or permitting the use of slurry compositions with higher mineral concentrations with processing equipment operating near the upper limit of prior art mineral concentration for any particular mineral-lactam composition.

3,622,536

EXOTHERMIC HOT TOPS

Ronald W. Ruddle, Rocky River, and Michael Yendrek, Cleveland, both of Ohio, assignors to Foseco International Limited, Birmingham, England

Filed Oct. 17, 1968, Ser. No. 768,554
Int. Cl. C08g *51/10;* C08k *1/14*
U.S. Cl. 260—38 4 Claims

A composition for lining the inner surface of a casting mould for casting metal or of a hot top for such a mould which comprises ballmill dust, a fluoride, a binder resin and a specific combination of inorganic fibers.

3,622,537

STABILIZED CARBONIZABLE COMPOSITIONS

Donald G. Needham, and George R. Hill, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Mar. 10, 1969, Ser. No. 805,854
Int. Cl. C08f 45/08, 45/56
U.S. Cl. 260—41 B 8 Claims

Polymeric compositions containing minor amounts of antioxidant, UV stabilizers and carbon black are rendered tracking resistant (breakdown under high voltage) by incorporating a metal oxide pigment and, optionally, magnesium oxide.

3,622,538

STABILIZED PIGMENTED POLYCARBONATE RESIN

David R. Green, Mt. Vernon, Ind., assignor to General Electric Company

Filed Aug. 19, 1969, Ser. No. 851,439
Int. Cl. C08f 51/58
U.S. Cl. 260—45.95 4 Claims

An aromatic polycarbonate composition that is color stable, which composition consists of an aromatic polycarbonate resin having in admixture therewith 0.01–0.1 weight percent of an organic phosphite and 0.001–0.05 weight percent of glycerol, all of which are based on the weight of the aromatic polycarbonate resin.

3,622,539

STABILIZED POLYOLEFIN RESIN COMPOSITIONS

Donald E. Paul, Boxboro, and Richard A. Hebert, Chelmsford, both of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Feb. 24, 1969, Ser. No. 801,784
Int. Cl. C08f
U.S. Cl. 260—45.75 R 7 Claims

This disclosure relates to the use of certain homogeneous chromium-oxide containing titanium dioxide reaction products as ultraviolet stabilizers for polyolefins.

3,622,540

METHOD OF CURING EPOXY RESINS USING N-(AMINOALKYL)-LACTAMS OR DIAZA-BICYCLO-ALKENES

Sei Hashimoto; Keizo Nakatani, and Shoji Suzuki, all of Kyoto, Japan, assignors to San-Abbott Limited, Kyoto, Japan

Filed June 12, 1969, Ser. No. 832,858
Int. Cl. C08g 30/14
U.S. Cl. 260—47 8 Claims

This invention relates to the method of hardening an epoxy resin containing 1,2-epoxy group in the presence of an N-(aminoalkyl)-lactam.

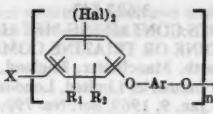
3,622,541

HALOGEN-CONTAINING, HIGH-MOLECULAR, SOLUBLE, THERMOPLASTIC POLYARYL POLYETHERS

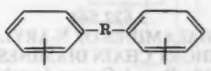
Gerhard Darsow, Krefeld-Uerdingen; Ludwig Bottenbruch, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 9, 1969, Ser. No. 823,493
Claims priority, application Germany, June 7, 1968, P 17 70 593.0The portion of the term of the patent subsequent to Nov. 6, 1970, has been disclaimed.
Int. Cl. C08g 23/00
U.S. Cl. 260—61 9 Claims

The invention relates to new halogen-containing, high-molecular, soluble, thermoplastic polyaryl polyethers of the formula (I)



in which R_1 and R_2 denote hydrogen or identical or different alkyl or alkoxy radicals with one to four carbon atoms; Hal is fluorine, chlorine or bromine; Ar is an unsubstituted or substituted phenylene, naphthylene, diphenylene or polynuclear bivalent aromatic radical of the formula (II)



where R denotes a bivalent aliphatic, cycloaliphatic or araliphatic radical with one to eight carbon atoms or —O—, —S—, —SO—, —SO_2—or —CO—, X denotes a halogen atom or the radical

—O —Ar —OH,

Y denotes a hydrogen atom or the radical

and *n* denotes an integer from about 3 to about 200. These new polyethers are produced by reacting molar amounts of a tetrahalobenzene or of several tetrahalobenzenes of the formula (III)

and of a bisphenolate or of several bisphenolates of the formula (IV)

Me —O —Ar —O —Me

in which Me denotes an alkali metal, in a polar organic solvent at temperatures between about 80° C. and about 180° C.

3,622,542

METHOD OF PRODUCING POLYURETHANES

H. Robert Klouman, Timonium, and Henry Gould, Pikesville, both of Md., assignors to Alcolac Chemical Corporation, Baltimore, Md.

Filed Apr. 2, 1969, Ser. No. 812,889
Int. Cl. C08g 22/36, 22/44
U.S. Cl. 260—77.5 AC 5 Claims

Polyurethane elastomers and flexible and rigid polyurethane foams of improved physical characteristics are obtained by employing N,N'-tetramethyl-2-hydroxy-1,3-diamino propane as catalyst in reactions involving organic compounds containing one or more hydroxyl groups with organic compounds containing one or more hydroxyl groups with organic compounds containing one or more reactive groups of the formula—NCY in which Y is either oxygen or sulfur.

3,622,543

POLYAMIDES CONTAINING METAL SALT OF PYRIMIDINE OR TRIAZINE COMPOUND

John David Garforth, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Jan. 9, 1969, Ser. No. 790,159
Int. Cl. C08g 20/38
U.S. Cl. 260—78 R 6 Claims

Fiber-forming polyamides having an increased affinity for Basic Dyestuffs which are obtained by polymerizing polyamide forming components in the presence of a triazine or pyrimidine compound which contains at least one atom or group which is capable of reacting with amino groups present in the polyamide forming compounds, and which also contains at least one sulfonated arylamino group.

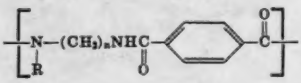
3,622,544

POLYTEREPHTHALAMIDES OF N-ARYL-SUBSTITUTED SHORT CHAIN DIAMINES

John Richard Caldwell, and George Joseph O'Neill, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 16, 1969, Ser. No. 858,537
Int. Cl. C08g 20/20
U.S. Cl. 260—78 R 11 Claims

Linear terephthalamide polymers having high tensile modulus composed of recurring units having the structural formula:



wherein *n* is 2 or 3 and R is aryl.

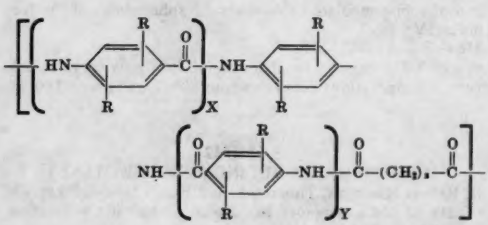
3,622,545

HIGH MOLECULAR WEIGHT AROMATIC-ALIPHATIC ORDERED COPOLYAMIDES

Veronika Foldi, Wilmington, Del., and Joseph C. Shivers, West Chester, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 14, 1969, Ser. No. 876,988
Int. Cl. C08g 20/20
U.S. Cl. 260—78 13 Claims

High molecular weight aromatic-aliphatic ordered copolyamides consisting essentially of repeating structural units corresponding to the formula



wherein X and Y are individually selected positive integers and the sum of X+Y is an integer within the range of 4 to 24, inclusive, Z is an integer from 2 to 12, inclusive, and each R is individually selected from the group consisting of hydrogen and a monovalent radical replacement for hydrogen on nuclear carbon which is nonreactive in polyamidation reactions, are prepared. These copolyamides are useful in the preparation of shaped articles (e.g., fibers and films).

3,622,546

UNSATURATED ESTERS OF POLYMERS AND THEIR PREPARATION

Fritz Engelhardt, Frankfurt-Fechenheim; Hanswilli von Brachel, Offenbach, and Wilhelm Kunze, Frankfurt-Fechenheim, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt, Germany

Filed June 3, 1968, Ser. No. 734,176
Claims priority, application Germany, June 3, 1967, C 42530
Int. Cl. C08f 3/64, 3/66, 19/10
U.S. Cl. 260—78.5 7 Claims

An allyl or methallyl ester of a carboxyl-containing polymer is prepared by reacting a polymer containing carboxyl groups, in the form of an alkali metal salt, with an alkenyl halide in the presence of a cuprous salt catalyst.

3,622,547

VULCANIZATION SYSTEM FOR ACRYLATE ELASTOMERS (TRITHIOCYANURIC ACID AND DITHIOCARBAMIC ACID DERIVATIVES)

Nicholas P. Ermidis, West New York, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Oct. 29, 1969, Ser. No. 872,010
Int. Cl. C08f 27/06
U.S. Cl. 260—79.5 P 9 Claims

A vulcanizable acrylic elastomer composition having chlorine or epoxy groups contains as a vulcanization system trithiocyanuric acid and a dithiocarbamic acid derivative. 2,2'-dithio-bis(benzothiazole) is included when maximum scorch protection is desired.

3,622,548

POLYMERS AND CATALYST COMPOSITIONS

Hans Emde; Kurt Benedikter, and Peter Hegenberg, all of Marl, Germany, assignors to Chemische Werke Huels A.G., Marl, Germany

Filed Sept. 1, 1967, Ser. No. 664,908
Claims priority, application Germany, Sept. 2, 1966, C 40009
Int. Cl. C08f 1/56, 15/04
U.S. Cl. 260—80.78 15 Claims

Readily vulcanizable ethylene-olefin copolymers having a desired molecular weight range are produced on the basis of a Ziegler catalyst activated by a perchlorocrotonic acid halide or ester.

3,622,549

VULCANIZATION OF FLUOROELASTOMERS

William John Keller, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 536,641, Mar. 23, 1966, now abandoned. This application Aug. 27, 1969, Ser. No. 853,529
Int. Cl. C08f 27/08
U.S. Cl. 260—80.77 11 Claims

Process for vulcanizing fluoroelastomers by heating the elastomer in the presence of a secondary monoamine and an aromatic polyamine or aromatic polyol. Vulcanizates with outstanding physical properties are obtained from this reasonably rapid, low-scorch curing process.

3,622,550

COPOLYMERS OF ALPHA PINENE AND CERTAIN SUBSTITUTED BUTADIENES AND PROCESS OF PREPARATION

Anargiros Pete Patellis, Rostraver Township, Westmoreland County, and John F. Holohan, Jr., Mount Lebanon Township, Allegheny, both of Pa., assignors to Pennsylvania Industrial Chemical Corporation

Filed Oct. 31, 1969, Ser. No. 873,126
Int. Cl. C08d 3/06, 3/10
U.S. Cl. 260—82.1 5 Claims

A process for producing resinous copolymers of alpha pinene and certain substituted butadienes which comprises contacting a mixture of monomers of alpha pinene and a substituted butadiene selected from the group consisting of isoprene and piperylene with a cocatalyst consisting essentially of aluminum chloride and an organosilicon compound

in an inert diluent. The copolymers are characterized by a high softening point, good resistance to color degradation by heat and the ability to impart cohesive strength in coating and adhesive applications.

3,622,551

COPOLYMERS FROM PARA TERTIARY BUTYL STYRENE AND A DIOLEFIN AND METHOD FOR PRODUCING SAME

Bernard J. Davis, Pass Christian, Miss., assignor to Reichhold Chemicals, Inc., White Plains, N.Y.

Filed Nov. 17, 1969, Ser. No. 877,526
Int. Cl. C08d *3/02*; C08f *19/06*
U.S. Cl. 260—84.1 **16 Claims**

Copolymers are prepared from a diolefin and para tertiary butyl styrene in the presence of a Friedel-Crafts catalyst at 10°–90° C. The diolefin may be isoprene, piperylene and cyclopentadiene in a concentration ranging from about 95 percent to about 5 percent based upon the weight of the monomers. Resins thus produced are essentially colorless and have excellent color stability and show outstanding qualities when used in pressure sensitive adhesive systems.

3,622,552

PROCESS FOR PRODUCING CRYSTALLINE OLEFIN POLYMERS AND CATALYST COMPOSITIONS THEREFOR

Junichi Fukuda; Kijuro Tashiro; Michio Koga; Toshio Hori; Heiichiro Ogawa; Ellichi Takeshita, and Katsuo Akaiwa, all of Yokkaichi-shi, Japan, assignors to Mitsubishi Petrochemical Co., Ltd., Tokyo, Japan

Continuation of application Ser. No. 543,535, Apr. 19, 1966, now abandoned. This application Oct. 3, 1969, Ser. No. 866,082 Claims priority, application Japan, Apr. 27, 1965, 40/24656, Mar. 2, 1966 41/12740
Int. Cl. C08f *1/56, 3/10*; B01j *11/84*
U.S. Cl. 260—88.2 **3 Claims**

Polymerization of olefins and catalyst therefor, said catalyst comprising polymerizing at least one member selected from the group consisting of ethylene, propylene, butene-1 and styrene in the presence of a catalyst composition comprising (1) an organoaluminum compound having the formula, AlR_2X wherein R represents a hydrocarbon residue selected from the group consisting of alkyl, aryl, aralkyl, alkaryl and cycloalkyl groups and X represents a halogen atoms selected from the group consisting of chlorine, bromine and iodine, (2) a halide of a transition metal of Groups IV, V and VI of the Periodic Table of the Elements, and (3) an aliphatic carboxylic ester having a side chain on a carbon atom in a α-position to the ester carbon atom, the molar proportion of said organoaluminum compound, said halide of transition metal and said aliphatic carboxylic ester being 10–0.5 : 1 : 0.01–1.

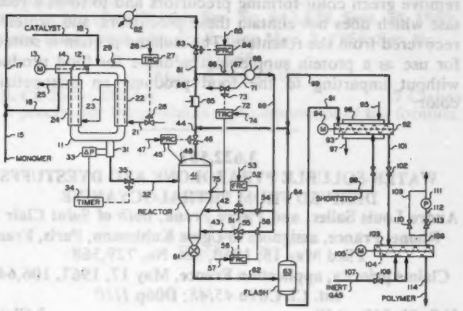
3,622,553

AGITATED REACTOR AND GAS FLUIDIZED BED REACTOR IN SERIES FOR POLYMERIZATION OF VINYL CHLORIDE

Martin R. Cines, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Dec. 18, 1967, Ser. No. 691,609
Int. Cl. C08f *3/30, 1/04*
U.S. Cl. 260—92.8 **5 Claims**

Vinyl chloride, alone or with a suitable comonomer, is continuously polymerized under liquid phase bulk conditions in an agitated reactor to a solid polymer content about 15 percent. A portion of the reaction effluent is continuously or periodically withdrawn from the agitated reactor and flushed into a fluidized bed reactor wherein vaporous vinyl chloride is employed as the fluidizing gas. Vinyl chloride gas is withdrawn and at least a portion thereof reintroduced into the fluidized reactor as the fluidizing gas. The excess vinyl chloride gas can be condensed and recycled to the agitated reactor. A polymer stream is withdrawn and passed through a monomer recovery system which can include a wash tower, a



flash tank, drying conveyors and inert gas and/or vacuum strippers.

3,622,554

PRODUCTION OF CROSS-LINKED POLYETHYLENE FLOCK

Erich Behr, Troisdorf, and Rolf Beckmann, Seigburg, both of Germany, assignors to Veba-Chemie AG, Gelsenkirchen, Buer, Germany

Filed Feb. 9, 1967, Ser. No. 614,823
Claims priority, application Germany, Feb. 14, 1966, D 49359
Int. Cl. C08f *47/10*
U.S. Cl. 260—2.5 **6 Claims**

Production of cross-linked polyethylene flock by introducing a cross-linking agent and polyethylene into a zone under pressure and under a temperature sufficiently high to support cross-linking of the polyethylene and then abruptly releasing the pressure whereby a cross-linked polyethylene flocculent material is formed.

3,622,555

METHOD FOR PRODUCING LOW BULK DENSITY, FREE-FLOWING POLYMER POWDERS

Raymand A. Rothenbury, and Richard W. Ford, both of Sarnia, Ontario, Canada, assignors to The Dow Chemical Company, Midland, Mich.

Filed June 2, 1969, Ser. No. 829,805
Int. Cl. C08d *5/00*; C08f *1/88, 47/02*
U.S. Cl. 260—94.9 **12 Claims**

Free-flowing powders of normally solid, thermoplastic organic polymers, e.g., polyethylene, having decreased bulk densities are prepared by (1) dispersing a particulate form of the thermoplastic polymer in a nonsolvent liquid medium containing a nonionic wetting agent, (2) heating the resulting dispersion to a temperature from about 10° C. below the Vicat softening point to about the Vicat softening point of the polymer while subjecting the dispersion to agitation and (3) cooling the dispersion under continued agitation. Such powers are useful in flame spraying, fluid-bed coating and the like.

3,622,556

PREPARING LIGHT-COLORED PROTEIN ISOLATE FROM SUNFLOWER MEAL BY ALKALI EXTRACTION UNDER AN INERT GAS BLANKET FOLLOWED BY MEMBRANE ULTRAFILTRATION

David E. O'Connor, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sept. 8, 1969, Ser. No. 856,195
Int. Cl. A23j *1/14*
U.S. Cl. 260—123.5 **7 Claims**

Light-colored protein is recovered from sunflower meal by alkali extracting the meal under an inert gas blanket to form a solid spent meal phase and a liquid extract phase separating

the phases, and acid precipitating protein from the extract phase. In another and preferred embodiment, the extract directly after it is separated from the spent meal in the separation step is subjected to membrane ultrafiltration to remove green color-forming precursors and to form a retentate which does not contain these precursors, and protein is recovered from the retentate. The isolated protein is suitable for use as a protein supplement additive for food products without imparting to the food products an unappetizing color.

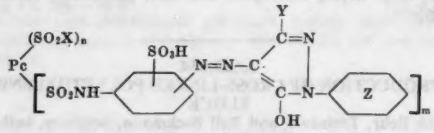
3,622,557

WATER-SOLUBLE PYRAZOLONE AZO DYESTUFFS DERIVED FROM PHTHALOCYANINE

Andre Louis Sailer, and Pierre Frank, both of Saint Clair du Rhone, France, assignors to Ugine Kuhlmann, Paris, France

Filed May 15, 1968, Ser. No. 729,368
Claims priority, application France, May 17, 1967, 106,642
Int. Cl. C09b *45/48;* **D06p** *1/10*
U.S. Cl. 260—147 **3 Claims**

Dyestuffs of the formula:



in which Pc represents the copper phthalocyanine residue, X represents an -OH or -NH-alkyl-OH group, Y represents a methyl or carboxyl group, the benezene ring Z may be substituted by at least one halogen atom or alkyl or sulpho group, *m* represents an integer from 1 to 4, and *n* represents an integer from 0 to 3, the sum *m+n* being equal to 4, and the possible substitutents of the ring Z may be the same or different when *m* is equal to or greater than 2. These dyestuffs are suitable for the dyeing of animal fibers, for example, leather in bright shades ranging from green to blue and the colorations are very uniform and remarkably fast to light, washing and solvents.

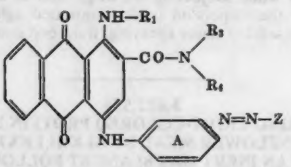
3,622,558

DIFFICULTLY WATER-SOLUBLE ANTHRAQUINONE DYESTUFFS

Hans Peter Kolliker, Munchenstein, and Mario Christen, Reinach, both of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Original application Feb. 20, 1967, Ser. No. 617,060, now Patent No. 3,541,182. Divided and this application July 24, 1969, Ser. No. 860,457
Int. Cl. C09b *1/42, 29/08, 43/12*
U.S. Cl. 260—152 **8 Claims**

Dyestuffs free from salt-forming, water-solubilizing groups which dissociate acid in water which are of the formula



wherein
R_1 represents hydrogen or lower alkyl,
R_3 represents hydrogen, lower alkyl, hydroxy-lower alkyl, alkenyl of at most four carbon atoms, cyclohexyl or benzyl, and
R_4 represents hydrogen, lower alkyl, hydroxy-lower alkyl or R_3 and R_4 taken together with the nitrogen atom to which they are linked, represent pyrrolidino, piperidino or morpholino,
Z represents phenyl or phenyl monosubstituted by chlorine, bromine, fluorine, nitro, lower alkyl, lower alkoxy, hydroxy-lower alkyl, lower alkoxy-carbonyl, lower alkyl-sulfonyl or lower alkyl-sulfonyloxy,
and ring A bears no further substituents or is further monosubstituted by methyl, methoxy or chlorine, are particularly suited for the dyeing of hydrophobic organic fiber materials, especially polyethylene glycol terephthalate fibers but also other polyester fibers and synthetic polyamide and polyacrylonitrile fibers. The dyeings on polyethylene glycol terephthalate have great color strength and excellent fastness to sublimation and light.

3,622,559

METHOD FOR PRODUCING PECTINS HAVING HIGH RESISTANCE TO BREAKAGE AND HIGH CAPABILITY FOR GELLING IN THE PRESENCE OF CALCIUM

Raldon R. Wiles, and Christian J. B. Smit, both of Corona, Calif., assignors to Sunkist Growers Inc., Los Angeles, Calif.

Filed Nov. 1, 1967, Ser. No. 679,714
Int. Cl. C08b *19/02*
U.S. Cl. 260—209.5 **13 Claims**

The invention involves the production of pectins, especially from citrus peel, and produced for use in gels where strong resistance to breakage and substantial freedom from weeping are desired. While such pectins are produceable from some other fruits such as apples, and also from beets, these pectins are preferably obtained from citrus peels such as lemon and orange peels. Chemically, the structure is generally conceived as being made up of long chains of anhydro-galacturonic acid units. The carboxyl groups of the galacturonic acid units are either free, present in the form of a salt, an acid amide, or a methyl ester, somewhat as indicated in FIG. 2.

3,622,560

PREPARATION OF KETAL SUGARS

Nathan Chadwick Hindley, Welwyn Garden City; Michael James O'Leary, Digswell, Welwyn, England, and Niklaus Halder, Oberwill, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Apr. 3, 1969, Ser. No. 816,875
Claims priority, application Great Britain, Feb. 4, 1969, 5,861/69
Int. Cl. C07c *47/18*
U.S. Cl. 260—209 R **15 Claims**

Preparation of ketal sugars from sugars utilizing ferric chloride and ferric bromide as a catalyst.

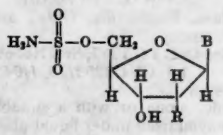
3,622,561

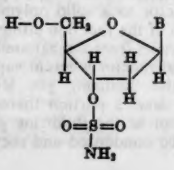
NUCLEOSIDE SUGAR ESTERS OF SULFAMIC ACID AND METHOD FOR PREPARATION OF THE SAME

Morris J. Robins; Roland K. Robins, and Dennis A. Shuman, all of Salt Lake City, Utah, assignors to University of Utah

Filed Aug. 18, 1969, Ser. No. 851,041
Int. Cl. C07d *51/52, 51/54*
U.S. Cl. 260—211.5 R **6 Claims**

Novel nucleoside sugar esters of sulfamic acid having the formula





where R is selected from the group consisting of hydrogen and hydroxyl and B is a nucleic acid base selected from the group consisting of adenine, hypoxanthine, guanine, cystosine, uracil, and thymine and a method for preparing the esters. The esters are useful as antibacterial, antitrypanosamal, and, in vitro anticancer agents.

3,622,562

NOVEL CROSS-LINKED DERIVATIVES OF MACROMOLECULAR ANHYDRO-GLUCOSIDES

Johannes Muetgeert, Delft, Netherlands, assignor to Vasco Industries Corp., New York, N.Y.

Filed June 3, 1968, Ser. No. 733,807
Claims priority, application Netherlands, May 30, 1967, 6707457
Int. Cl. C08b *19/06*
U.S. Cl. 260—233.3 R **33 Claims**

Starch products that absorb water in many times their volume to form gels having improved stability to electrolytes and provided by reacting finely divided starch with dichloroacetic acid or a salt thereof, or with both this reactant and mono-chloro-acetic acid or a salt thereof. The product contains anhydroglucose units cross-linked together by ether linkages of carboxyalkylene ether bridges.

3,622,563

AMPHOTERIC STARCH

Lee H. Elizer, Keokuk, Iowa, assignor to The Hubinger Company, Keokuk, Iowa

Continuation-in-part of application Ser. No. 597,561, Nov. 29, 1966, now abandoned. This application Apr. 14, 1969, Ser. No. 816,100
Int. Cl. C08b *19/01*
U.S. Cl. 260—233.3 R **15 Claims**

Amphoteric starch which contains both basic (e.g., tertiary amino or cyanamide) and acidic (e.g., sulfonic or carboxylic) groups linked to the starch molecule and which is especially useful for sizing mixed fibers in the form of threads or yarns, such as mixtures of polyester fibers and cotton fibers. The products also have other advantages. For example, they can be dyed with both acid and basic dyes.

3,622,564

SYNTHESIS OF GLYCOSE HYDROCARBON SULFONATE SURFACTANTS

Edmund T. Kittleman, and Roy A. Gray, both of Bartlesville, Okla., assignors to Phillips Petroleum Company

Filed Jan. 3, 1969, Ser. No. 788,950
Int. Cl. C07c *69/32*
U.S. Cl. 260—234 R **11 Claims**

Glycose hydrocarbonsulfonates useful as surfactants are prepared by reacting a glycose with a hydrocarbonsulfonyl halide in the presence of a tertiary amine.

3,622,565

DIBENZAZEPINE DERIVATIVES AND THEIR PREPARATION

Jean Clement Louis Fouche, Hauts-de-Seine, and Claude Georges Alexandre Gueremy, Val-de-Marne, both of France, assignors to Rhone-Poulenc S.A., Paris, France

Filed Jan. 17, 1968, Ser. No. 698,436
Claims priority, application France, Jan. 18, 1967, 91,646
Int. Cl. C07d *41/08*
U.S. Cl. 260—239 D **11 Claims**

The invention provides new 10-amino-10,11-dihydrodibenzo[b,f]eazepine derivatives and their salts which are useful as antidepressants, analgesics, anticonvulsants and tranquillizers.

3,622,566

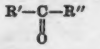
METHOD FOR PREPARING DIAZA-CYLOPROPANES

George Huck, and Siegfried Paulsen, both of Dortmund-Eving, Germany, assignors to Bergwerksverband G.m.b.H., Essen, Germany

Continuation of application Ser. No. 843,579, Sept. 30, 1959, now abandoned. This application Mar. 3, 1969, Ser. No. 803,646
Int. Cl. C07d *45/00*
U.S. Cl. 260—239 AA **7 Claims**

A process for the production of compounds of the formula:

wherein R′ is hydrogen or an alkyl group of one–five carbon atoms and R″ is an alkyl group of one–five carbon atoms or phenyl; and R′ and R″ when taken together with the carbon atoms of the diazapropane form cyclohexyl, said process comprising reacting chlorine and an excess of ammonia, the ammonia being present in a volume ratio of between 1:4 and 1:50, with a liquid carbonyl compound of the formula



wherein R′ and R″ are as defined above.

3,622,567

NORCAMPHANE DERIVATIVES

Raj Kumer Razdan, Belmont, Mass., assignor to Arthur D. Little Inc., Cambridge, Mass.

Filed May 13, 1968, Ser. No. 728,819
Int. Cl. C07d *23/06*
U.S. Cl. 260—239 E **3 Claims**

New norcamphane derivatives bearing at the 3-position a 2-hydroxyethylamino, 2-haloethylamino, ethyleneimino, or cyclopropylmethylamino group, having useful hypotensive activity, and prepared, respectively, by alkylation of 3-amino-2,2,3-trimethylnorcamphane with ethylene oxide; halogenation of the resulting 3-(2-hydroxyethylamino)-2,2,3-trimethylnorcamphane; cyclization, in the presence of alkali, of the resulting 3-(2-haloethylamino)-2,2,3-trimethylnorcamphane; or acylation of 3-amino-2,2,3-trimethylnorcamphane with a cyclopropylcarbonyl halide and alkali metal aluminum hydride reduction of the resulting 3-cyclopropylcarbonylamino-2,2,3-trimethylnorcamphane.

3,622,568

OXDIAZOLYL AND THIADIAZOLYL PENICILLINS

Peter Bamberg, Enhorna, and Berndt Olof Harald Sjoberg, Sodertalje, both of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden

Filed June 25, 1969, Ser. No. 836,616
Claims priority, application Great Britain, July 9, 1968, 32,634/68
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 **7 Claims**

Penicillins containing a substituted or unsubstituted oxdiazolylmethyl or thiadiazolyl group in the side chain are disclosed. The compounds are of value as antibacterial agents, as nutritional supplements in animal feeds as agents for treatment of mastitis in cattle and as therapeutic agents in poultry and animals, including man, in the treatment of infectious diseases caused by micro-organisms.

3,622,569

6-(2-ARYL-3-AZIDO-AND-3-AMINO-METHYL-ISOCROTONAMIDO)PENICILLANIC ACIDS

Raymond Urgel Lemieux; Rintje Raap; Clinton Gordon Chin, and Ronald George Micetich, all of Alberta, Canada, assignors to R & L Molecular Research, Ltd., Edmonton, Alberta, Canada

Filed Aug. 5, 1969, Ser. No. 847,744
Int. Cl. C07d *99/16*
U.S. Cl. 260—239.1 27 Claims

6-(2-Aryl-3-azido- and 3-amino-methyl-isocrotonamido)penicillanic acids are valuable as antibacterial agents, as nutritional supplements in animal feeds and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment of infectious diseases caused by Gram-positive and Gram-negative organisms. For example, 6-(3-aminomethyl-2-phenylisocrotonamido)penicillanic acid is prepared by catalytic hydrogenation (Pd-C) of potassium 6-(3-azidomethyl-2-phenylisocrotonamido)penicillanate which in turn is prepared by reaction of 6-aminopenicillanic acid with 3-aizdomethyl-2-phenylisocrotonyl chloride.

3,622,570

DIHALOMETHANO-STEROIDS

Eugene E. Galantay, Morristown, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

Filed May 28, 1969, Ser. No. 828,739
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 12 Claims

The compounds are estratriene derivatives containing a 6,7-dihalomethano function. The compounds are useful as hypocholesteremics.

3,622,571

VINYL-SUBSTITUTED PHTHALANS

Francis Joseph McEvoy, Pearl River, N.Y., and George Rodger Allen, Jr., Old Tappan, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 747,832, July 26, 1968, now abandoned. This application Aug. 8, 1969, Ser. No. 848,685
Int. Cl. C07d *5/32*
U.S. Cl. 260—240 D 8 Claims

Organic compounds of the class vinyl substituted phthalans are preared chemically from the corresponding vinyl isobenzofurylium compounds. The novel compounds are useful for their antidepressant activity.

3,622,572

PROCESS FOR PRODUCING MORPHOLINOALKYL BENZOTHIAZINONES AND RELATED COMPOUNDS

John Krapcho, Somerset, N.J., assignor to E. R. Squibb & Sons, Inc., New York, N.Y.

Filed Apr. 1, 1969, Ser. No. 812,346
Int. Cl. C07d *93/12, 87/42*
U.S. Cl. 260—243 R 6 Claims

Basically substituted benzothiazinones, benzoxazinones, dihydroquinolinones and benzazepinones are obtained in greatly improved yield and with simplified isolation procedures when the basic side chain is introduced using dimethylsulfoxide as the reaction medium.

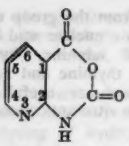
3,622,573

3-AZAISATOIC ANHYDRIDE

George F. Schlaudecker, Toledo, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of application Ser. No. 663,199, Aug. 13, 1967, now abandoned, which is a continuation-in-part of application Ser. No. 510,034, Nov. 26, 1965, now abandoned. This application July 17, 1968, Ser. No. 745,366
Int. Cl. C07d *39/00*
U.S. Cl. 260—244 R 1 Claim

A heterocyclic compound of the formula



for which the trivial designation 3-azaisatoic anhydride is suggested, and a method for the production thereof.

The method includes reacting, in an aqueous solution and at a temperature below 40° C., quinolinimide, a substantially equimolecular proportion of sodium hydroxide, and about one mole of sodium hypochlorite per mole of quinolinimide, and, for maximum yield, subsequently adjusting the pH to a predetermined level.

3,622,574

N-(MORPHOLINO ALKYL)-BENZO[B]THIOPHENE-2-CARBOXAMIDES

William Blythe Wright, Jr., Woodcliff Lake, N.J., and Herbert Joseph Brabander, Nanuet, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of application Ser. No. 747,805, July 26, 1968, now abandoned. This application May 23, 1969, Ser. No. 827,131
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 9 Claims

The preparation of N-(morpholinoalkyl)benzo[b]thiophene-2-carboxamides from benzo[b]thiophene-2-carboxamides by reaction with an alkylenediamine, is described. The compounds are also prepared by other methods such as from benzo[b]thiophene-2-carbonyl chlorides by reaction with an alkylenediamine. The products are useful as depressants and antidepressants.

3,622,575

FERTILIZERS

Brian Michael John Ellul, and Douglas Charles Harper, both of Ipswitch, England, assignors to Fisons Limited, Felixstowe, England

Filed Sept. 16, 1968, Ser. No. 760,064
Claims priority, application Great Britain, Sept. 20, 1967, 42,806/67
Int. Cl. C05b *15/00*
U.S. Cl. 71—29 4 Claims

A granular fertilizer containing urea and a potassium metaphosphate of the general formula $(KPO_3)_nM$, where n is a figure in the range 10 to 200 and M is an inorganic compound introduced to control the value of n. Examples of this inorganic compound are calcium chloride, ferric oxide and phosphate rock, etc. The present invention also provides for a process of producing such a fertilizer composition.

3,622,576

2-TERTIARYAMINO OR PYRIDYL ALKYL-4,6 DIPHENYL-3 PYRIDAZONES

Jacques Baetz, La Garenne-Colombes, France, assignor to Seperic

Filed May 6, 1968, Ser. No. 726,749
Claims priority, application Great Britain, May 19, 1967, 23,462/67
Int. Cl. C07d *87/46*
U.S. Cl. 260—247.1 6 Claims

The new diphenyl-pyridazones are 4,6-di-(phenyl or substituted phenyl)-pyridaz-3-ones substituted at 2-position by a

dialkylaminoalkyl group or an alkyl group substituted with a heterocycle containing a nitrogen atom. They are useful as psychotropic and analgesic drugs.

3,622,577

TRIMERIZATION OF ORGANIC ISOCYANATES

Charles John Pedersen, Salem, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 588,302, Oct. 21, 1966, now abandoned, which is a continuation-in-part of application Ser. No. 358,937, Apr. 10, 1964, now abandoned. This application Nov. 8, 1968, Ser. No. 774,493
Int. Cl. C07d 55/38
U.S. Cl. 260—248 NS 16 Claims

A process for trimerizing organic isocyanates by mixing said isocyanates with a complex of a basic alkali metal salt and a macrocyclic polyether.

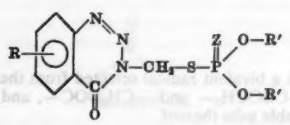
3,622,578

SUBSTITUTED S-((4-OXO-1,2,3-BENZOTRIAZIN-3(4H)-YL)METHYL) PHOSPHOROTHIOATES AND PHOSPHORODITHIOATES

Raymond H. Rigterink, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Apr. 1, 1969, Ser. No. 812,288
Int. Cl. C07d 55/08
U.S. Cl. 260—248 AS 7 Claims

Alkylthio-, alkylsulfinyl- and alkylsulfonyl-substituted S-((4-oxo-1,2,3-benzotriazin-3(4H)-yl)methyl) phosphorothioates and phosphorodithioates of the formula



and methods employing and compositions comprising these substituted phosphorothioates and substituted phosphorodithioates for controlling parasites, especially arthropod pests such as insects and arachnids. In the above and succeeding formulas in the present specification and claims, Z represents oxygen or sulfur; R represents loweralkylthio, loweralkylsulfinyl or loweralkylsulfonyl; and each R′ independently represents loweralkyl.

3,622,579

DERIVATIVES OF 2-ANILINO-1,3-DIAZACYCLOPENTENE-(2)

Helmut Stahle, Ingelheim, Rhine; Herbert Koppe, Ingelheim, Rhine; Karl Zeile, Ingelheim, Rhine; Wolfgang Hoecke, Budenheim, Rhine, and Hans-Wolfgang Samtleben, Ingelheim, Rhine, all of Germany, assignors to Boehringer Ingelheim G.m.b.H, Ingelheim, Rhine, Germany

Continuation of application Ser. No. 801,863, Feb. 24, 1969, now abandoned, which is a continuation of application Ser. No. 583,424, Sept. 30, 1966, now abandoned. This application Aug. 28, 1969, Ser. No. 854,034
Int. Cl. C07d 49/34
U.S. Cl. 260—253 2 Claims

The compounds are 2-(disubstituted-anilino)-1,3-diazacyclopentenes-(2) and acid addition salts thereof, useful as hypotensives in warm-blooded animals.

3,622,580

PIPERAZINO-ACETYLAMINO-9-FLUORENONES AND-ANTHRAQUINONES

Otto Hromatka, Vienna XIX; Maximilian Knollmuller, Vienna III, and Kurt A. Maier, Vienna XIX, all of Austria, assignors to Smith Kline & French Laboratories, Philadelphia, Pa.

Filed Mar. 25, 1969, Ser. No. 810,344
Int. Cl. C07d 51/70
U.S. Cl. 260—268 7 Claims

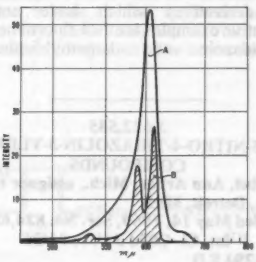
1-[(4-Methyl-1-piperazinyl)-acetylamino]-9-fluorenones and-anthraquinones optionally substituted in the 4-position by chlorine, bromine, hydroxy or nitro have antipyretic activity. They are generally prepared by reaction of a 1-(α-haloacetylamino)-9-fluorenone or-anthraquinone with N-methylpiperazine.

3,622,581

PERINONES

Edward E. Jaffe, Union, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 31, 1969, Ser. No. 795,506
Int. Cl. C07d 57/02
U.S. Cl. 260—282 2 Claims



10,22-dioxodibenzimidazo (1, 2-b : 1′, 2′-b′) dibenzo (de: d′ e′)-p-dioxino (2, 3-g : 5, 6-g′) diisoquinolines and isomers are prepared, being useful as luminescent materials or phosphors.

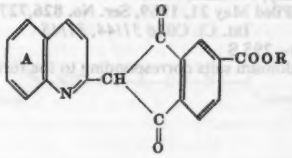
3,622,582

DISPERSE QUINOPHTHALONE DYES CONTAINING A CARBOXYLIC ESTER GROUP

Ernst Schefczik, Ludwigshafen, Rhine, Germany, assignor to Badische Anilini & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed May 22, 1968, Ser. No. 731,309
Claims priority, application Germany, May 23, 1967, P 15 69 671.6
Int. Cl. C07d 33/48
U.S. Cl. 260—287 R 7 Claims

Quinophthalone-5(6)-carboxylic ester dyes, which are particularly useful for dyeing polyester and synthetic polyamide textile material, said dyes having the formula:



(I)

in which R denotes a linear or branched hydroxyalkyl radical having four to eight carbon atoms and in which the ring A may bear, as substituents, halogen atoms and/or alkyl groups or alkoxy groups.

3,622,583
YELLOW DYES OF THE PHTALIMIDOQUINOPHTHALONE SERIES
Johannes Dehnert, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany
Filed July 22, 1969, Ser. No. 843,776
Claims priority, application Germany, July 24, 1968, P 17 70 960.3
Int. Cl. C07d 33/48
U.S. Cl. 260—287 R 2 Claims

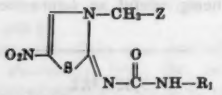
New yellow phthalimidoquinophthalones containing halogen which are outstandingly suitable as pigment dyes.

3,622,584
CERTAIN 1-PYRIDYL 2-MERCAPTO-IMIDAZOLE DERIVATIVES
Karl J. Doebel, Ossining, N.Y., and Andre R. Gagneux, Basel, Switzerland, assignors to Geigy Chemical Corporation, Greenburgh, N.Y.
Continuation-in-part of application Ser. No. 204,643, June 1962, abandoned, which is a continuation-in-part of application Ser. No. 500,245, Oct. 21, 1965, abandoned. This application Apr. 17, 1968, Ser. No. 721,929
Int. Cl. C07d 31/50
U.S. Cl. 260—294.8 G 4 Claims

The compounds are of the class of substituted 2-mercaptoimidazole derivatives which have antiinflammatory utility. Illustrative examples are 1-(4-fluorophenyl)-5-methyl-2-mercaptoimidazole and 1-methyl-5-phenyl-2-mercaptoimidazole.

3,622,585
CERTAIN 5-NITRO-4-THIAZOLIN-3-YLIDENEUREA COMPOUNDS
Leslie M. Werbel, Ann Arbor, Mich., assignor to Parke, Davis & Company, Detroit, Mich.
Filed May 14, 1969, Ser. No. 824,680
Int. Cl. C07d 31/50, 91/26
U.S. Cl. 260—294.8 D 6 Claims

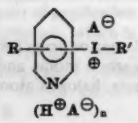
5-Nitro-4-thiazolin-2-ylideneurea compounds having the formula



where R_1 is alkyl or allyl and Z represents a heterocyclic group, such as thienyl, pyridyl, furyl, thiazolyl, and isoxazolyl, as well as these same groups substituted once or twice with methyl; and their production by reacting a 5-nitro-2-thiazolylurea with an appropriate organic halide in the presence of a base. The compounds are useful as schistosomacides and trichomonacides.

3,622,586
PYRIDYLIODONIUM SALTS
Zdravko Jezic, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.
Filed May 21, 1969, Ser. No. 826,727
Int. Cl. C07d 31/44, 31/48
U.S. Cl. 260—295 S 8 Claims

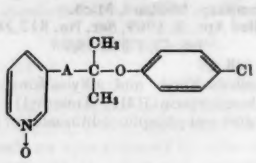
Pyridyliodonium salts corresponding to the formula



wherein R represents hydrogen, a lower alkyl, an acetamido, a chloro or a bromo group, R′ represents naphthyl, thienyl, phenyl, lower alkylphenyl, lower alkoxyphenyl, phenylphenyl, phenoxyphenyl, di-substituted phenyl in which the substituents are lower alkyl or lower alkoxy, A represents fluoride, chloride, bromide, iodide, trifluoroacetate, trichloroacetate, lower alkanoate, nitrate, acid sulfate, or tetrafluoroborate and *n* is an integer from 0 to 1. The compounds are useful as antimicrobials for the inhibition and control of the growth of bacterial and fungal organisms.

3,622,587
CERTAIN 3-PYRIDYLMETHYL-2-(P-CHLORO PHENOXY)-2-METHYL PROPIONATE-N-OXIDES AND DERIVATIVES THEREOF
Lars Anders Fritz Carlson, Bromma; Berndt Olof Harald Sjoberg, Sodertalje; Nils Erik Stjernstrom, Sodertalje, and Ake John Erik Helgstrand, Enhorna, all of Sweden, assignors to Aktiebolaget Astra, Sodertalje, Sweden
Filed Mar. 17, 1969, Ser. No. 807,948
Claims priority, application Great Britain, Mar. 25, 1968, 13,687/68
Int. Cl. C07d 31/34, 31/36
U.S. Cl. 260—295.5 R 3 Claims

Compounds represented by the formula:



wherein A is a bivalent radical selected from the group consisting of —$COOCH_2$— and —CH_2OOC—, and therapeutically acceptable salts thereof.

3,622,588
CERTAIN SUBSTITUTED TERPHENYL-AXYALKYL AMINES AND DERIVATIVES THEREOF
Rudolf G. Griot, Basel-Stadt, Switzerland, assignor to Sandoz-Wander, Inc.
Continuation-in-part of application Ser. No. 725,172, Apr. 29, 1968, now abandoned. This application Apr. 3, 1969, Ser. No. 813,301
Int. Cl. C07c 93/06
U.S. Cl. 260—296 20 Claims

This invention relates to ω-aminoalkoxy substituted terphenyls and N-oxides thereof useful as hypolipidemics, and to processes for preparation of such compounds involving key intermediates which include, for example: (1) substituted tercyclic-ols; or (2) p-(ω-aminoalkoxy) phenyl derivatives of various compounds which are, for example, cyclosubstituted-2-cyclohexen-1-ols, cyclo-substituted-cyclohexenes or cyclohexen-dienes; or (3) α-(m-terphenyl-4-yloxy) lower aliphatic monocarbocylic acids.

3,622,589
PROCESS FOR PRODUCING PYRIDOXINE-4,5-CYCLICMONOPHOSPHATE
Masao Tanaka, Tokyo-to, Japan, assignor to Kyowa Hakko Kogyo Kabushiki Kaisha (Kyowa Hakko Kogyo Co., Ltd.), Tokyo-to, Japan
Filed Feb. 18, 1969, Ser. No. 800,241
Claims priority, application Japan, Feb. 27, 1968, 43/11953
Int. Cl. C07d 31/28
U.S. Cl. 260—297 10 Claims

A process is provided for preparing pyridoxine-4,5-cyclic-monophosphate and salts thereof by phosphorylating a

derivative of 1,5-dihydro-8-methylpyrido [3, 4, *e*], [1, 3] dioxepin f9-ol or derivative or salt thereof. Pyridoxine-4,5-cyclicmonophosphate is useful as an intermediate in the preparation of pyridoxal-5-phosphate as pyridoxine-5-phosphate.

3,622,590

CERTAIN PERFLUOROALKYL POLYOXYALKYLENE QUATERNARY AMMONIUM SALTS AND DERIVATIVES THEREOF

John Thomas Gresham, Skillman, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Apr. 4, 1969, Ser. No. 813,725
Int. Cl. C07d *31/28*
U.S. Cl. 260—297 R **8 Claims**

Fluorinated halomethyl ethers and the quaternary salts thereof, which are useful as stain repellents, have the formulas:

$R_f(CH_2)_n(OR)_mOCH_2X$ and $[R_f(CH_2)_n(OR)_mOCH_2A]^+X^-$

wherein R_f is perfluoroalkyl of four to 16 carbon atoms, R is alkylene of two to three carbon atoms, X is halogen of the group chlorine or bromine, A is the residue of a tertiary nitrogenous base, *n* is an integer of one to 12 and *m* is an integer of one to four.

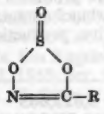
3,622,591

CERTAIN 5-ARYL-1,3,2,4-DIOXATHIAZOLE-2-OXIDES

Emmett H. Burk, Jr., Glenwood, Ill., and Donald D. Carlos, Crown Point, Ind., assignors to Atlantic Richfield Company

Continuation-in-part of application Ser. No. 662,891, Aug. 24, 1967, now abandoned , which is a continuation-in-part of application Ser. No. 502,348, Oct. 22, 1965, now abandoned. This application May 6, 1970, Ser. No. 37,365
Int. Cl. C07d *95/00*
U.S. Cl. 260—301 **10 Claims**

Compounds of the formula



wherein R is an aromatic hydrocarbon radical of 1 to 3 aromatic rings which can be substituted with, for instance, halogen, nitro, or alkoxy, e.g., methoxy, groups. The compounds can be made by reacting the corresponding hydroxamic acids and thionyl chloride. The compounds are useful as, inter alia, isocyanate generators and have the advantage over conventional aromatic isocyanates in that they can be easily handled and stored.

3,622,592

PYRROLO [2,1-B]BENZOTHIAZOLES

Stanley C. Bell, Penn Valley, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Mar. 4, 1968, Ser. No. 709,873
Int. Cl. C07d *91/44, 99/10*
U.S. Cl. 260—304 **8 Claims**

This invention is concerned with 1,2,3,3a-tetrahydro-1-iminopyrrolo[2,1-b]benzothiazoles and 3,3a-dihydropyrrolo[2,1-b]benzothiazol-1(2H)-ones which are pharmacologically active as central nervous system depressants.

3,622,593

1,1-DIMETHYL-3-(ISOTHIAZOL-5-YL)UREA

Gert P. Volpp, Princeton, N.J., and Luc R. Vannoorbeeck, Gasport, N.Y., assignors to FMC Corporation, New York, N.Y.

Filed Aug. 9, 1967, Ser. No. 659,312
Int. Cl. C07d *91/12*
U.S. Cl. 260—306.8 R **1 Claim**

A new chemical compound, of the formula 1,1-dimethyl-3-(isothiazol-5-yl)urea, has selective pre- and post-emergence herbicidal activity. The synthesis of this compound is described, and its utility is exemplified in both pre-emergence and post-emergence applications.

3,622,594

CHLOROPHENOXYACETYLOXAZOLIDONE HERBICIDES AND PREPARATION THEREOF

Edwin D. Little, Convent Station, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

Filed Aug. 27, 1968, Ser. No. 755,743
Int. Cl. C07d *85/28*
U.S. Cl. 260—307 C **1 Claim**

3-(Chlorophenoxyacetyl)-2-oxazolidones are prepared by reacting a 2-oxazolidone with a chlorinated phenoxyacetyl chloride. When the oxazolidone is unsubstituted in the 5-position, presence of an acid acceptor is helpful to improve yield. The products are useful as herbicides.

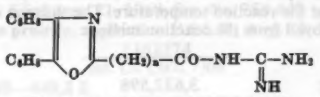
3,622,595

OXAZOLE N-AMIDINO-CARBOXYAMIDES WITH NATRIURETIC ACTION

Enzo Marchetti, Rome, Italy, assignor to Instituto Farmacologico Serono S.p.A., Rome, Italy

Filed Jan. 28, 1969, Ser. No. 794,788
Claims priority, application Italy, Jan. 31, 1968, 12243 A/68
Int. Cl. C07d *85/44*
U.S. Cl. 260—307R **4 Claims**

The invention relates to the synthesis and the pharmacological activity, particularly the natriuretic activity, of novel acyl-guanidine compounds. The new compounds are of the formula



wherein *n* represents the numbers 0, 1 or 2.

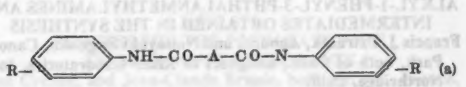
3,622,596

CARBANILIDE COMPOUNDS

Rudolf Fischer, Kehrsatz, near Berne, and Rudolf Hirt, Muri, near Berne, both of Switzerland, assignors to Dr. A. Wander, S.A., Berne, Switzerland

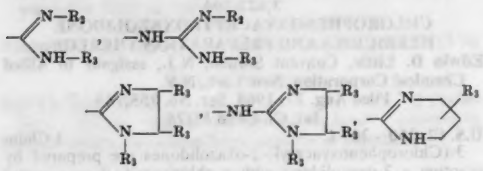
Continuation-in-part of application Ser. No. 263,395, Mar. 7, 1963, now abandoned , which is a continuation-in-part of application Ser. No. 144,294, Oct. 11, 1961, now abandoned. This application Oct. 23, 1967, Ser. No. 677,031 Claims priority, application Switzerland, Oct. 14, 1960, 11, 547/60, Mar. 9, 1962, 2880/62
Int. Cl. C07d *49/34*
U.S. Cl. 260—309.6 **17 Claims**

Carbanilide compounds which exhibit tuberculostatic, trypanocidal, antibabesial, antileukaemic and herbicidal properties, and which have the following formula:



wherein A stands for m- or p-phenylene, R_1-substituted m- or p-phenylene, m- or p-phenyleneamino, m- or p-phenylenediamino R_1-substituted m- or p-phenylenediamino, p-styrylene, p-phenylenedivinylene, vinylenedi-p-phenylene, or m- or p-pyridylene, R_1 denoting halogen, amino, nitro, hydroxy, lower alkyl, lower alkoxy, lower alkylthio, lower al-

kanoyl amino, or lower mono- or dialkylaminocarbonyl; and R are the same or different residues of one of the formulas:



R_2 denoting hydrogen, alkyl having from one to five carbon atoms, or alkoxyalkyl having from one to five carbon atoms, and R_3 being the same or different members of the group consisting of hydrogen, methyl, and ethyl; and (b) the therapeutically acceptable acid addition salts of (a).

3,622,597

METHOD OF PREPARING THIIRANES FROM MERCAPTOALCOHOLS

Jon E. Fletcher, and Rodney A. Nelson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sept. 13, 1968, Ser. No. 759,775
Int. Cl. C07d *59/00;* **C11d** *7/34*
U.S. Cl. 260—327 E **16 Claims**

The method comprises continuously adding mercaptoalcohols to a heated solution of a dehydration catalyst dissolved in a liquid diluent. The diluent and catalyst are of low volatility at the reaction temperature. The thiirane is continuously removed from the reaction mixture.

3,622,598

PRODUCTION OF SULFOLANE

James L. Willis, Borger, Tex., assignor to Phillips Petroleum Company

Filed Nov. 21, 1966, Ser. No. 595,902
Int. Cl. C07d *63/04;* **C01d** *5/00;* **C01f** *11/46*
U.S. Cl. 260—332.1 **8 Claims**

A sulfolane compound is prepared by reacting sulfur dioxide with an unsaturated organic compound containing two or more ethylenic linkages, in the absence of a solvent, to produce a molten sulfolene compound, introducing the molten sulfolene compound into a suitable hydrogenation solvent, pulling a vacuum on the resulting solution to remove a portion of the sulfur dioxide contained therein, adding hydrogen peroxide to the solution to convert any remaining sulfur dioxide to sulfur trioxide, adding aqueous caustic to the thus treated solution to convert the sulfur trioxide to a sulfate salt to substantially prevent the prolonged existence of sulfuric acid, filtering the solution to remove any insoluble salts and/or polymer, and subjecting the filtrate to hydrogenation conditions to convert the sulfolene compound to the corresponding sulfolane compound.

3,622,599

PROCESS FOR THE PREPARATION OF N,N-DI-LOWER ALKYL-1-PHENYL-3-PHTHALANMETHYLAMINES AND INTERMEDIATES OBTAINED IN THE SYNTHESIS

Francis J. Petracek, Agoura, and Nobuyuki Sugisaka, Canoga Park, both of Calif., assignors to Riker Laboratories, Inc., Northridge, Calif.

Filed Nov. 29, 1968, Ser. No. 780,169
Int. Cl. C07d *5/34*
U.S. Cl. 260—346.2 **2 Claims**

A process for the preparation of N,N-di-lower alkyl-1-phenyl-3-phthalanmethylamines comprising the conversion of a 1-phenyl-3-phthalancarboxylic acid to its corresponding acid halide, treatment of the acid halide to form the corresponding amide and then reducing the carbonyl group of the amide substituent to yield the N,N-di-lower alkyl-1-phenyl-3-phthalanmethylamine final product and the N,N-di-lower alkyl-1-phenyl-3-phthalancarboxamide intermediate obtained in the synthesis.

3,622,600

METHOD FOR PREPARING COLOR STABLE MALEIC ANHYDRIDE

Jack Bernard Feder, Dumont, N.J., assignor to Halcon International Inc.

Filed Feb. 24, 1969, Ser. No. 801,835
Int. Cl. C07c *57/14*
U.S. Cl. 260—346.8 **6 Claims**

This invention relates to a method for preparing color stable maleic anhydride by passing molten maleic anhydride through a bed of alkali sulfates or halides.

3,622,601

FLUORINATED EPOXIDE

James W. Dale, Winchester, Mass., assignor to Monsanto Research Corporation, St. Louis, Mo.

Filed Feb. 17, 1969, Ser. No. 802,741
Int. Cl. C07c *19/08;* **C07d** *1/06*
U.S. Cl. 260—348.5 R **9 Claims**

Method of producing a perfluorinated 1,2-epoxide comprising contacting a perfluorinated olefin with oxygen difluoride. The perfluorinated epoxides can be used to produce polymers which are useful lubricants.

3,622,602

STEREOSPECIFIC REDUCTION OF 3-KETO STEROIDS

Paul D. Klimstra, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Feb. 28, 1969, Ser. No. 803,445
Int. Cl. C07c *169/20*
U.S. Cl. 260—397.5 **8 Claims**

The reduction of 17α-ethynyl-17β-hydroxyestr-4-en-3-one with the reducing agent produced from an alkali metal hydride and a tertiary carbinol containing at least five carbon atoms results in selective production of the 3β-hydroxy epimer in excellent yield.

3,622,603

REDUCING AGENTS FOR PHOTOGRAPHIC PROCESSES

Stanley M. Bloom, Waban, and Paul S. Huyffer, Lynnfield, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Original application July 24, 1967, Ser. No. 655,324, now Patent No. 3,482,971, dated Dec. 2, 1969. Divided and this application Sept. 16, 1968, Ser. No. 810,047
Int. Cl. C07c *143/74, 143/78*
U.S. Cl. 260—397.7 **6 Claims**

This invention relates to novel immobile reducing agents which, upon oxidation, auto-react intramolecularly in such a way as to form a new heterocyclic ring.

3,622,604

SYNTHETIC POLYAMIDES OF A DIMERIC FATTY ACID, A LOWER ALIPHATIC CARBOXYLIC ACID ETHYLENE DIAMINE, AND A CO-DIAMINE

Manfred Drawert, Werne a.d. Lippe, and Eugen Griebsch, Unna, both of Germany, assignors to Schering AG, Berlin, Germany

Continuation-in-part of application Ser. No. 527,107, Feb. 14, 1966, now abandoned , and a continuation-in-part of 495,319, Oct. 12, 1965, now abandoned. This application Apr. 9, 1969, Ser. No. 815,279. Claims priority, application Germany, Oct. 15, 1964, Sch 35965, Feb. 19, 1965 Sch 36782, Mar. 26, 1965, Sch 36782
Int. Cl. C09f *7/00*
U.S. Cl. 260—404.5 **10 Claims**

Synthetic polyamides, useful as binders in the formulation of printing inks, formed between a dimeric fatty acid, an unsubstituted lower aliphatic monocarboxylic acid, ethylene diamine, and certain aromatic, cycloaliphatic, and other aliphatic diamines, including aliphatic ether diamines; methods for preparing such polyamides.

3,622,605

PROCESS FOR PREPARING HYDROXYCARBOXYLIC ACID ESTERS

Koene De Jong, and Bastiaan Van der Ven, both of Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 18, 1969, Ser. No. 808,356
Claims priority, application Great Britain, Mar. 21, 1968, 13776/68
Int. Cl. C11c *3/02*
U.S. Cl. 260—410.6 15 Claims

Aliphatic δ-hydroxy carboxylic acid esters, for instance δ-hydroxydecanoic and -dodecanoic glycerides, which are flavoring agents for fatty foodstuffs, are prepared by the acid-catalysed reaction of a δ-lactone with a polyhydric alcohol until at least 80 percent of the ester present at equilibrium in the esterification reaction has been formed, and removal of acid catalyst before 10 percent of lactone polymer is formed.

3,622,606

PREPARATION OF COMPLEX TRANSITION METAL SUBHALIDES

Jerome Robert Olechowski, Trenton, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Dec. 29, 1967, Ser. No. 694,410
Int. Cl. C07f
U.S. Cl. 260—429 R 8 Claims

Processes are described for the preparation of complex transition metal subhalides by the reaction of an elemental halogen with an arene complex of a transition metal in the zero valence state. Extraction of such reaction mixture with an inert organic solvent for the reactants, which is a nonsolvent for the subhalide, is shown to produce a high-purity product. The use of such subhalides in conjunction with an aluminum alkyl reducing agent as a polymerization catalyst is likewise described.

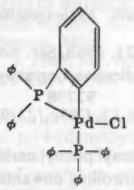
3,622,607

PALLADIUM CHELATES HAVING A PALLADIUM-CARBON BOND

Donald M. Fenton, Anaheim, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Nov. 3, 1969, Ser. No. 873,641
Int. Cl. C07c *11/26*
U.S. Cl. 260—429 R 10 Claims

A palladium chelate comprising palladium and a halide, alkanoate, or hydroxyl in a 4- or 5-membered ring with an aromatic biphyllic ligand. The chelate is an active catalyst in hydrocarboxylation reactions and demonstrates high selectivity for the production of straight-chain products. A typical chelate with chloride and triphenylphosphine is:



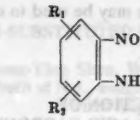
3,622,608

NITRO ANILINO-POLYALKYLENE POLYAMINES AND THE SALTS THEREOF

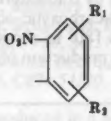
Gustav Schafer, and Norbert Ottaw, both of Frankfurt/Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister, Lucius & Bruning, Frankfurt/Main, Germany

Continuation-in-part of application Ser. No. 588,291, Oct. 21, 1966, now abandoned. This application July 22, 1969, Ser. No. 843,820
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 6 Claims

Compounds of the formula and their salts



in which R_1 and R_2 each represents hydrogen or chloro, *m* represents an integer 2 or 3 and *n* represents an integer 1, 2, 3, or 4, R_3 represents hydrogen or



wherein R_1 and R_2 each is defined as above.

3,622,609

METHOD OF PREPARING 1,3-BIS/HYDROXYALKYL(ARYL)/-TETRAORGANODISILOXANES

Vladimir Florovich Mironov, ul. Gubkina, 4, kv. 13, and Vadim Lvovich Kozlikov, Novye Cheremushki, Korpus 19, kv. 15, both of Moscow, U.S.S.R.

Filed Aug. 21, 1968, Ser. No. 754,449
Claims priority, application U.S.S.R., Aug. 23, 1967, 1182274
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 E 13 Claims

Carbofunctional diols of the disiloxane series are prepared by reacting organohalosilanes with unsaturated alcohols in the presence of a tertiary amine as hydrogen chloride acceptor, and in an organic solvent medium, subjecting the resultant alkenyloxydiorganosilanes to polymerization in the presence of a hydrosilylation catalyst, boiling the mixture of siloxyalkanes thus obtained with an alkaline solution, and thereafter separating the desired product.

3,622,610

SULFONATE ESTERS OF GALLIC ACID DERIVATIVES

Werner Hausermann, Allschwil; Ado Kaiser, Neu-Frenkendorf, and Marcel Scheer, Basel, all of Switzerland, assignors to Hoffmann-La Roche, Inc., Nutley, N.J.

Filed Jan. 16, 1969, Ser. No. 791,793
Claims priority, application Switzerland, Feb. 9, 1968, 1972/68
Int. Cl. C07c *143/68*
U.S. Cl. 260—456 P 12 Claims

3,5-Bis-(benzyloxy)-4-methoxy-benzoic acid alkyl esters, are prepared, for example, from the corresponding 3,4,5-tris-(substituted-sulfonyloxy)-benzoic acid alkyl ester. The end products are useful in the preparation of 3,5-dihydroxy-4-methoxy-phenylalanines having hypotensive activity.

3,622,611

PROCESS FOR THE PREPARATION OF TRIORGANOPEROXYBORANES

Noel Crenne, and Jean-Claude Brunie, both of Lyon, France, assignors to Rhone-Poulenc S.A., Paris, France

Continuation of application Ser. No. 543,016, Apr. 18, 1966, now abandoned. This application May 19, 1969, Ser. No. 828,088
Int. Cl. C07f *5/04*
U.S. Cl. 260—462 R 10 Claims

Tri(organoperoxy)boranes are prepared by the reaction of organic hydroperoxides with alkyl orthoborates at not above 90° C., in a molar ratio of at least 5:1, or 0.4:1 to 2:1 when

an inert solvent is present. The products may be used to oxidize aromatic compounds to phenols.

3,622,612

PROCESS FOR THE PRODUCTION OF NEOPENTYLGLYCOL-CARBOXYLIC ACID-CARBONIC ACID MIXED ESTERS

Erwin Muller, Leverkusen, Germany, assignor to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 28, 1968, Ser. No. 732,512
Claims priority, application Germany, July 12, 1967, F 52930
Int. Cl. C07c *69/00;* **C08g** *17/13, 17/18*
U.S. Cl. 260—463 **5 Claims**

Process for producing neopentylglycol-carboxylic acid-carbonic acid mixed esters by transesterifying a diaryl carbonate with a neopentylglycol-carboxylic acid semiester at a temperature of from about 180° to about 220° C. and the utility of such products in the production of lacquers and resins and plastics.

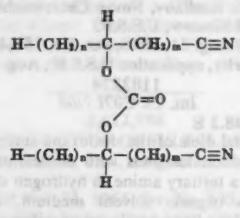
3,622,613

CARBONATE ESTERS OF HYDROXY SUBSTITUTED FATTY NITRILES

Robert C. Kuder, Excelsior, Minn., and Marwan R. Kamal, Dhahran, Saudi Arabia, assignors to General Mills, Inc.

Filed Apr. 25, 1969, Ser. No. 819,438
Int. Cl. C07c *121/34, 119/04;* **C08g** *22/18*
U.S. Cl. 260—463 **8 Claims**

Carbonate dinitriles of the formula:



where *n* is 5 to 20, *m* is 0 to 15 and the sum of *n* and *m* is 14 to 20. Diamines and diisocyanates derived therefrom with the latter being useful for preparing polymers.

3,622,614

1-CYANO-BENZOCYCLOBUTENES

Erwin Friedrich Jenny, Riehen, and Karl Schenker, Basel, both of Switzerland, assignors to CIBA Corporation, New York, N.Y.

Original application Mar. 18, 1966, Ser. No. 535,368, now Patent No. 3,377,347, Continuation-in-part of application Ser. No. 297,675, July 25, 1968, now abandoned. Divided and this application Nov. 3, 1967, Ser. No. 680,350
Int. Cl. C07c *87/02, 121/64*
U.S. Cl. 260—465 **5 Claims**

Compounds of the formula

in which Ph represents a substituted orthophenylene radical and R′ hydrogen or a substituted or unsubstituted alkyl radical, for example 1-cyano-benzocyclobutene. Use: intermediates for the preparation of the corresponding 1-(aminomethyl)benzocyclobutenes which possess analgesic, particularly antimorphine activity and also antitussive activity.

3,622,615

N² -(P-TOLYLSULFONYL)-L-ARGININE ESTERS

Ernest D. Nicolaides, and Richard E. Maxwell, both of Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

Filed Nov. 6, 1968, Ser. No. 773,973
Int. Cl. C07c *143/78*
U.S. Cl. 260—470 **6 Claims**

Pharmaceutical compositions containing as an active ingredient an N²-(p-tolylsulfonyl)-L-arginine ester or a salt thereof, methods for the use of the N²-(p-tolylsulfonyl)-L-arginine esters and salts thereof as agents that potentiate the action of urokinase in lysing blood clots; and the isopropyl, sec-butyl, and 2-isopropoxyethyl esters of N²-(p-tolylsulfonyl)-L-arginine and salts thereof and their production by reacting N²-(p-tolylsulfonyl)-L-arginine with 2-propanol, 2-butanol, and 2-isopropoxyethanol, respectively, in the presence of a strong acid.

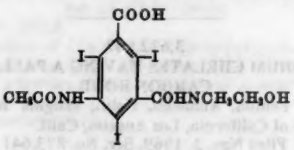
3,622,616

NEW BENZOIC ACID DERIVATIVES

Michel Guerbet, Paris, and Guy Tilly, Drancy, both of France, assignors to Laboratories Andre Guerbet, Saint Ouen, France

Filed Nov. 27, 1967, Ser. No. 685,847
Claims priority, application France, July 10, 1967, 113715
Int. Cl. C07c *103/32*
U.S. Cl. 260—471 R **1 Claim**

2,4,6-triiodo-3-(N-hydroxy ethylcarbamyl)-5-acetylamino benzoic acid of formula



is useful as a radiographic opacifier.

3,622,617

UREIDOPHENYL PHENYL CARBAMATES

Hermann Windel, Frankenthal, Pfalz, and Adolf Fischer, Mutterstadt, Pfalz, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen, Rhine, Germany

Filed May 21, 1968, Ser. No. 730,893
Claims priority, application Germany, May 31, 1967, B 92798
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **2 Claims**

Substituted ureidophenyl phenyl carbamates and the use of said compounds for controlling unwanted plant growth.

3,622,618

HYDROXYPHENYL URETHANES

Max Duennenberger, Frenkendorf, and Max Schellenbaum, Muttenz, both of Switzerland, assignors to CIBA Limited, Basel, Switzerland

Filed July 3, 1969, Ser. No. 742,173
Claims priority, application Switzerland, July 11, 1967, 9948/67
Int. Cl. C07c *125/06*
U.S. Cl. 260—471 C **8 Claims**

Urethanes consisting of a 2-hydroxy-1,1′-diphenyl ketone having an R–NH–CO–O– group in 4-position and wherein R e.g. represents an alkyl or an aryl radical. These urethanes are useful as stabilizers for organic material and above all as agents for combatting harmful micro-organisms.

3,622,619

BIPHENYL COMPOUNDS

Erwin F. Schoenewaldt, Watchung; George G. Hazen, Westfield, and Richard F. Shuman, Westfield, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed July 31, 1968, Ser. No. 748,923
Int. Cl. C07c *69/78, 69/14, 65/04*
U.S. Cl. 260—476 C 2 Claims

The invention relates to novel intermediates particularly 4-benzoyloxy-4'-(fluorosulfonyl) or (fluoro)biphenyl, which compounds are used to prepare 5-(4-fluorophenyl)salicylic acids and derivatives thereof which latter compounds are antiinflammatory agents.

3,622,620

METHOD OF MAKING VINYL ACETATE

Shigeki Horiie, Tokyo; Chiyuki Fujii, Kanagawa-ken; Atsuhiro Ihara, Tokyo; Hideo Nedachi, Tokyo, and Takeo Shinada, Kanagawa-ken, all of Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of application Ser. No. 645,894, June 14, 1967, now abandoned. This application Oct. 27, 1969, Ser. No. 869,932
Int. Cl. C07c *69/24*
U.S. Cl. 260—497 A 8 Claims

Manufacture of vinyl acetate by reacting ethylene with acetic acid and oxygen in the presence of a platinum group catalyst is improved by increasing catalytic reaction with a promotor, namely, a vanadyl salt of chloroacetic, fluoroacetic or sulfonic acids.

3,622,621

2-ALKYL-N-ARYL-3-ARYLIMINO-1-CYCLOPENTEN-1-YLAMINE SALTS

Robert B. Garland, Northbrook, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Filed Dec. 18, 1967, Ser. No. 691,126
Int. Cl. C07c *87/50*
U.S. Cl. 260—501.2 5 Claims

Preparation of the captioned compounds—for example, 2-methyl-N-phenyl-2-phenylimino-1-cyclopenten-1-ylamine p-toluenesulfonate—and their valuable biological properties—including antimicrobial activity in respect of protozoa such as *Tetrahymena gelleii*, bacteria such as *Diplococcus pneumoniae*, fungi such as *Trychophyton mentagrophytes*, and algae such as *Chlorella vulgaris;* anti-hypercholesterolemic activity; and the capacity to inhibit dicotyledonous seed germination—are disclosed.

3,622,622

α-[P-(DIMETHYLAMINOALKOXY) PHENYL]-α'-NITRO-4-METHOXYSTILBENE COMPOUNDS AND METHODS FOR THEIR PRODUCTION

Horace A. DeWald, Ann Arbor, Mich., assignor to Parke Davis & Company, Detroit, Mich.

Filed Nov. 3, 1967, Ser. No. 680,322
Int. Cl. C07c *93/06, 93/08*
U.S. Cl. 260—501.18 6 Claims

α- p-[3-(Dimethylamino)propoxy]phenyl -α'-nitro-4-methoxystilbene and α- p-[4-(dimethylamino)butoxy]phenyl -α'-nitro-4-methoxystilbene and acid-addition and quaternary ammonium salts thereof, useful as pharmacological agents that exhibit antiprogestational, hypocholesteremic, and antifertility activity; and their production by (a) reacting a 1-[p-(dimethylaminoalkoxy)phenyl]-1-(p-methoxyphenyl)-2-phenyl-ethanol compound or a α-[p-(dimethylaminoalkoxy)phenyl]-4-methoxystilbene compound with nitric acid, (b) reacting an α-[p-(dimethylaminoalkoxy)phenyl]-4-methoxystilbene compound with a lower alkanoyl nitrate and then heating the intermediate 1-(p-methoxyphenyl)-1-alkanoyloxy-1-[p-(dimethylaminoalkoxy)phenyl]-2-nitro-2-phenylethane compound with a strong acid, (c) reacting a 1-[p-(dimethylaminoalkoxy)phenyl]g8-1-(p-methoxyphenyl)-2-nitro-2-phenylethane compound with a dehydrogenating agent, (d) reacting a metallated salt derivative of α-(p-hydroxyphenyl)-α'-nitro-4-methoxystilbene with a N,N-dimethyl-3-halopropylamine or a N,N-dimethyl-4-halobutylamine, and (e) reacting a α-[p-(haloalkoxy)phenyl]-α'-nitro-4-methoxystilbene compound with dimethylamine.

3,622,623

1-SUBSTITUTED INDENYL-3-ALIPHATIC ACIDS AND ESTERS

Tsung-Ying Shen, Westfield, and Bruce O. Linn, Somerville, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 28, 1968, Ser. No. 755,798
Int. Cl. C07c *145/00, 147/06*
U.S. Cl. 260—515 5 Claims

1-aralkylidene and aralkenylidene indenyl-3-aliphatic acids and their esters and amides are used as anti-inflammatory agents. They are prepared by the condensation of the corresponding 1-indenone with an aralkyl or aralkenyl aldehyde under basic conditions.

3,622,624

PROCESS FOR THE PRODUCTION OF ADIPIC ACID

Yael Arad, Tel-Aviv; Moshe Levy, Rehovot, and David Vofsi, Rehovot, all of Israel, assignors to UCB (Union Chimique-Chemische Bedrijven), Drogenbos, Belgium

Filed July 18, 1968, Ser. No. 745,712
Claims priority, application Israel, July 21, 1967, 28373
Int. Cl. C07c *51/00, 55/14*
U.S. Cl. 260—537 R 4 Claims

Adipic acid can be produced in a good yield and with only a small production of propionic acid by carrying out the alkali metal amalgam hydrodimerization of acrylic acid in dimethyl sulfoxide preferably admixed with water.

3,622,625

N-SULFAMOYL-P-TOLUENSULFONAMIDE

Milton Wolf, West Chester, and John H. Sellstedt, St. Davids, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed June 10, 1968, Ser. No. 735,560
Int. Cl. C07c *143/78*
U.S. Cl. 260—556 N 1 Claim

This invention is concerned with sulfamoyl substituted sulfonamides which have demonstrated pharmacological activity as central nervous system depressants.

3,622,626

N-ACYLATED PERFLUOROALKANESULFONAMIDES

George G. I. Moore, White Bear Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Dec. 18, 1968, Ser. No. 784,877
Int. Cl. C07c *143/74*
U.S. Cl. 260—556 F 4 Claims

This invention relates to certain N-acyl aliphatic sulfonamides and salts thereof which are active as herbicides. Many of the compounds of this invention are also physiologically active as diuretics and/or anticonvulsants. Processes for the preparation of the compounds and compositions for horticultural use containing these compounds are described.

3,622,627

4-DEDIMETHYLAMINATETRACYCLINE AND 5A, 6-ANHYDRO DERIVATIVES THEREOF

Robert K. Blackwood, Gales Ferry, and Charles R. Stephens, Jr., East Lyme, both of Conn., assignors to Pfizer Inc., New York, N.Y. continuation-in-part of Ser. No. 360,435, Apr. 16, 1964, abandoned, which is a continuation-in-part of Ser. No. 247,874, Dec. 28, 1962, abandoned

Filed Sept. 13, 1967, Ser. No. 667,357
Int. Cl. C07c *103/19*
U.S. Cl. 260—559 AT 5 Claims

4-Dedimethylaminotetracyclines and the corresponding 5a,6-anhydroderivatives having an oxo, hydroxy, substituted imino, amino or substituted amino group other than dimethylamino at the C-4-position useful as antimicrobial agents. The 4-oxo-4-dedimethylaminotetracyclines are prepared by oxidation of tetracyclines with a hydrocarbon dicarboxylic acid haloimide and then converted by reduction to the corresponding 4-hydroxy compounds or by reaction with a primary amine to 4-substituted imino derivatives. The latter compounds are reduced to 4-amino derivatives which are reductively methylated or alkylated to 4-substituted-4-dedimethylaminotetracyclines. Dehydration of the tetracycline compounds affords the corresponding 5a,6-anhydro compounds.

3,622,628

AMINOPOLYCYCLODECANES

Robert John Stedman, Paoli, Pa., assignor to Smith Kline & French Laboratories, Philadelphia, Pa.

Original application Oct. 11, 1965, Ser. No. 494,881, now Patent No. 3,456,008. Divided and this application Feb. 28, 1969, Ser. No. 813,384

Int. Cl. D07c 87/40; A61k 27/00

U.S. Cl. 260—563 P 3 Claims

1-Amino and aminomethylpentacyclo [6.2.0.0^{2,7}.0^{4,10}.0^{5,9}]-decanes, 3-amino and aminomethyltetracyclo [5.3.0.0^{2,6}.0^{4,9}]-decanes, and 1-amino and aminomethyltetracyclo [5.2.0.0^{2,6}.0b4,9]nonanes are prepared starting fro tetrachlorocyclopentadienone cyclic ethylene ketal and 1,4-cyclohexadiene and proceeding with ring-closure, hydrolysis and Favorskii reactions. The products are antivirals.

3,622,629

N-(HYDROXY-AMINOBENZYL)-3-HYDROXY-ANILINE COMPOUNDS

Laszlo Lugosy, Frankfurt am Main, Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

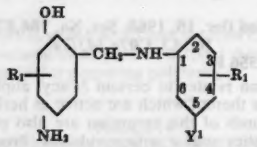
Continuation-in-part of application Ser. No. 663,494, Aug. 28, 1967. This application June 19, 1968, Ser. No. 738,109

Int. Cl. C07c 91/28, 91/42; F23l 17/02

U.S. Cl. 260—570 AB 7 Claims

Developer-coupler compounds having within the same molecule a p-aminophenol nucleus capable of developing a silver halide image and a separate dye forming nucleus capable of dye-coupling in situ during development of latent silver halide images to form a colored dye, e.g., a quinoneimine or azomethine dye image. The silver image and the dye image provide a combined image of high total maximum density with a minimum of initial silver halide. The p-aminophenol developer nucleus and coupler nucleus of the molecule are linked through a position ortho to the hydroxyl group of said p-aminophenol nucleus through a radical

wherein a free bond attached to CH_2 N are attached to cyclic carbon atoms. A representative and preferred compound has the formula



wherein the rings are benzene rings, R_1 is H, alkyl or one-four carbons, Cl, Br, or —COOH, and Y′ is —OH or —NH_2, and at least one of the coupling positions 2 and 4 is a free coupling position. Bis compounds containing a nuclei, as recited, are comprehended. The developer-coupler compounds are useful also in radiation-sensitive silver halide layers.

3,622,630

10-AMINOALKYL-9,10-DIHYDROANTHRACENES

Paul N. Craig, Ambler, and Charles L. Zirkle, Berwyn, both of Pa., assignors to Smith, Kline & French Laboratories, Philadelphia, Pa.

Continuation-in-part of application Ser. No. 631,584, Apr. 18, 1967, now abandoned, Continuation-in-part of application Ser. No. 526,975, Feb. 14, 1966, now abandoned. This application July 3, 1968, Ser. No. 742,171

Int. Cl. C07d 87/28

U.S. Cl. 260—570. TC 24 Claims

10-Aminoalkyl-9,10-dihydroanthracenes wherein the nucleus is substituted by halogen, lower alkyl, trifluoromethyl, lower alkylthio, lower alkylsulfonyl or N,N-dimethyl-sulfamyl and the amino group may be mono or dialkyl substituted as well as a monocyclic heterocyclic amino moiety are tranquilizers. Corresponding 9-lower alkyl or 9-phenyl derivatives also have utility as antidepressants. Compounds are generally prepared by reaction of a 10-bromoalkyl-anthracene with an appropriate amine followed by reduction to the 9,10-dihydroanthracene.

9-Substituted-10-aminoalkyl-9,10-dihydroanthracenes which are not benzo ring substituted have antidepressant activity with no tranquilizing activity. These compounds are generally prepared by alkylation of the 9,10-dihydroanthracene with an aminoalkyl halide.

3,622,631

17β-HYDROXY-10,17αβ-DIMETHYL-D-HOMO-C-NOR-13α-GON-4-EN-3-ONE AND CONGENERS

William F. Johns, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of application Ser. No. 545,582, Apr. 27, 1966, now abandoned. This application Apr. 25, 1968, Ser. No. 724,249

Int. Cl. C07c 49/30, 49/48

U.S. Cl. 260—586 H 18 Claims

Preparation of 17β-hydroxy-10,17αβ-dimethyl-D-homo-C-nor-13α-gon-4-en-3-one and congeners, and their capacity to block the effect of DCA on urinary sodium and potassium, are disclosed.

3,622,632

NOVEL 2-ARYL-1,3-INDANDIONES AND 2-ARYL-2,3-DIHYDROBENZ [F] INDENE-1,3-DIONES

Gerald F. Holland, Old Lyme, and Joseph G. Lombardino, Miantic, both of Conn., assignors to Pfizer Inc.

Filed Aug. 29, 1968, Ser. No. 756,324

Int. Cl. C07c 49/80

U.S. Cl. 260—590 4 Claims

Novel 2-aryl-1,3-indandiones and 2-aryl-2,3-dihydrobenz [f] indene-1,3-diones and their use in lowering the blood lipid level in mammals.

3,622,633

TRIHYDROCARBYL-9-[2,6,6-TRIMETHYL-1-CYCLOHEXEN-1-YL]-3,7-DIMETHYL-2,6,8-NONATRIEN-4YENE PHOSPHONIUM HALIDES

Joseph Donald Surmatis, West Caldwell, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Original application July 11, 1968, Ser. No. 743,979, Original application Dec. 4, 1964, Ser. No. 416,128, now Patent No. 3,408,414, dated Oct. 29, 1968. Divided and this application July 16, 1970, Ser. No. 55,582

Int. Cl. C07f 9/06; C07c 13/20

U.S. Cl. 260—606.5 F 2 Claims

This invention relates to trihydrocarbyl-9-[2,6,6-trimethyl-1-cyclohexen-1-yl]-3,7-dimethyl-2,6,8 nonatrien-4-yne phosphonium halides which are useful as intermediates in the preparation of trans-beta-carotene.

3,622,634

HALOGENATED ALKENYL SULFIDES

Pierre Legendre, De Fonval, France, assignor to Societe Nationale des Petroles D'Aquitaine, Courbevoie, France

Filed July 29, 1968, Ser. No. 748,230

Claims priority, application France, Aug. 1, 1967, 116438

Int. Cl. C07c 149/10, 149/34

U.S. Cl. 260—609 A 5 Claims

Bis (haloalkenyl) sulfides are prepared by the reaction of a stoichiometric excess of alkaline earth or alkali metal sulfide with an alkenyl halide.

3,622,635

PROCESS FOR THE PRODUCTION OF OXYGEN-CONTAINING FLUORO COMPOUNDS

Franco Gozzo, Saronno (Varese), and Venanzio Oprandi, Bergamo, both of Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Continuation-in-part of application Ser. No. 642,326, May 31, 1967. This application Sept. 6, 1968, Ser. No. 758,134

Int. Cl. C07c 43/30

U.S. Cl. 260—615 A 6 Claims

Process for producing polyoxyperfluoromethylene polymers, carbonylfluoride and C_2F_4O wherein

tetrafluoroethylene is reacted with molecular oxygen in the presence of ozone in a liquid reaction medium from the group of fluorinated and chlorofluorinated organic compounds at a temperature between substantially 10° and 40° C. and at an absolute pressure between substantially 700 and 800 mm./Hg.; the molar ratio C_2F_4 : O_2 ranges between substantially 1 and 2.5 (preferably 1.5 to 2) and the molar ratio C_2F_4 : O_3 ranges between substantially 10 and 500 (preferably 100 to 400).

3,622,636

M- AND P-ISOPROPENYLPHENYL-DIMETHYLCARBINOL

Heinrich Krimm, Krefeld-Bockum; Hans-Josef Buysch, Krefeld-Bockum, and Hermann Schnell, Krefeld-Uerdingen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed May 28, 1968, Ser. No. 732,511

Claims priority, application Germany, July 1, 1967, F 52840

Int. Cl. C07c *33/06*

U.S. Cl. 260—618 **1 Claim**

Meta and para-isopropenylphenyl-dimethylcarbinols and a process for producing them by partial catalytic dehydration of the corresponding meta or para-bis-carbinol, or by recovery of the desired product in statu nascendi by specific extraction or distillation thereof.

3,622,637

METHOD OF PRODUCING 2,2'-METHYLENE BIS(3,4,6-TRICHLOROPHENOL)

Thomas F. Cleary, Summit, N.J., assignor to Centerchem, Inc., New York, N.Y.

Filed Feb. 10, 1969, Ser. No. 798,145

Int. Cl. C07c *39/16*

U.S. Cl. 260—619 **10 Claims**

This invention is directed to a method of producing 2,2'-methylene bis (3, 4, 6-trichlorophenol), commonly known as hexachlorophene, in which (1) 1 mol of 2, 4, 5-trichlorophenol is reacted with 1 mol of formaldehyde, in a solvent, and under the influence of an acid catalyst to form 1 mol of a trichlorophenyl hemiformal; (2) another mol of 2, 4, 5-trichlorophenol is reacted with chlorosulfonic acid, in the presence or absence of a solvent, to form 1 mol of a trichlorophenyl ester of sulfuric acid; and (3) 1 mol of each of the products from steps (1) and (2) are reacted, in the presence of a solvent, to form one mol of hexachlorophene.

3,622,638

PREPARATION OF ORTHO-METHYL-SUBSTITUTED PHENOLS

Henry C. Chitwood, and Benjamin T. Freure, both of Charleston, W. Va., assignors to Union Carbide Corporation

Filed May 10, 1966, Ser. No. 548,869

Int. Cl. C07c *39/06*

U.S. Cl. 260—621 H **17 Claims**

It has been discovered that ortho-methyl-substituted phenols can be produced by the reaction of hydrogen, carbon monoxide or a carbon-monoxide-producing substance and a methyl acceptor under specified reaction conditions and in the presence of a catalyst selected from the group consisting of methyl and platinum group metals. By deliberate adjustment of the reaction conditions ortho-methyl-substituted phenols can be produced to the substantial exclusion of its other isomers, namely meta- and para-methyl-substituted phenols.

3,622,639

PROCESS FOR PREPARING HALOGENATED COMPOUNDS

Charles Carmen Cumbo, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 677,768, Oct. 24, 1967, now abandoned , Continuation-in-part of application Ser. No. 712,598, Mar. 13, 1968, now abandoned. This application June 6, 1968, Ser. No. 734,870

Int. Cl. C07c *25/04*, *25/18*

U.S. Cl. 260—649 DP **8 Claims**

Aryl chlorides are prepared by contacting at elevated temperatures phosgene, carbon tetrachloride or a mixture of phosphgene and carbon tetrachloride and an aryl sulfonic acid, an alkali or alkaline earth metal arylsulfonate or any arylsulfonyl chloride. For example 4,4'-dichlorobiphenyl can be prepared by heating 4,4'-biphenyldisulfonic acid with at least two moles of phosgene or carbon tetrachloride per mole of the disulfonic acid to 250°C.

3,622,640

AROMATIC BROMINATION PROCESS

Edward C. Taylor, Princeton, N.J., and Alexander McKillop, Norwich, England, assignors to Smith, Kline & French Laboratories, Philadelphia, Pa.

Filed Oct. 8, 1968, Ser. No. 766,002

Int. Cl. C07c *25/04*

U.S. Cl. 260—650 R **4 Claims**

Aromatic substrates such as benzene, substituted benzenes, naphthalenes, substituted naphthalenes, anthracene, phenanthrene, fluorene, biphenylene, and terphenyl are brominated to give pure monobromo products by reaction with bromine in the presence of thallic acetate.

3,622,641

DEHYDROHALOGENATION OF HALOGENATED COMPOUNDS

James Walter Crary, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 28, 1968, Ser. No. 712,897

Int. Cl. C07c *21/20*

U.S. Cl. 260—655 **9 Claims**

Halogen-containing organic compounds are treated with aqueous inorganic alkaline material in the presence of a catalytic amount of cyclic polyether to split off hydrogen halide.

3,622,642

POLYHALOGENALKANES

Charles Ferdinand Huebner, Chatham; Renat Herbert Mizzoni, Long Valley, and William Richard Schearer, Chatham, all of N.J., assignors to CIBA Corporation

Filed May 8, 1968, Ser. No. 727,657

Int. Cl. C07c *17/08*

U.S. Cl. 260—658 R **3 Claims**

Methallyl dichlorides or their homologs are reacted with hydrogen bromide in the presence of a peroxide, to yield 2-bromomethyl-1,3-dichloropropane or its homologs, which are valuable biocides and intermediates.

3,622,643

OXYCHLORINATION OF ETHYLENE AND VINYL CHLORIDE MIXTURES

Guy DuCrest, Martigues; Gerard Benaroya, Bois-Colombes, and Francois Laines, Martigues, all of France, assignors to Produits Chimiquis Pechiney-Saint-Gobain, Paris, France

Filed May 20, 1968, Ser. No. 730,609

Claims priority, application France, May 19, 1967, 106972

Int. Cl. C07c *17/02*, *17/04*

U.S. Cl. 260—658 R **15 Claims**

A process for oxychlorination to produce a reaction product containing significant amounts of 1,1,2-trichloroethane and 1,1,2,2-tetrachloroethane in addition to 1,2-dichloroethane by oxychlorination of a mixture of ethylene and vinyl chloride with a fixed bed catalyst.

3,622,644

OLIGOMERIZATION OF OLEFINS USING A RHENIUM COMPLEX CATALYST SYSTEM

Donald H. Kubicek, and Edmund T. Kittleman, both of Bartlesville, Okla., assignors to Phillips Petroleum

Filed Nov. 25, 1968, Ser. No. 778,795

Int. Cl. C07c *3/10*

U.S. Cl. 260—666 A **10 Claims**

Olefins are oligomerized by contacting the olefin with a homogeneous rhenium complex catalyst in combination with an organoaluminum adjuvant. Additionally, olefins are oligomerized by contact with a heterogeneous catalyst prepared by depositing upon a suitable solid support the homogeneous combination mentioned above.

3,622,645

CONVERSION OF BENZENE TO CYCLOHEXANE IN THE PRESENCE OF A CATALYST OF SMALL PARTICLE SIZE

Norman L. Carr, Allison Park, and Allen E. Somers, Pittsburgh, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 4, 1970, Ser. No. 034,408
Int. Cl. C07c *5/10*
U.S. Cl. 260—667 **11 Claims**

A process for the production of substantially pure cyclohexane from a mixture of benzene, cyclohexane and hydrogen in the presence of a hydrogenation catalyst. The product purity is improved and particularly the contamination of the product by the production of undesirable normal paraffins is reduced when utilizing hydrogenation catalyst particles of not more than one-tenth inch in diameter. A preferred embodiment of the process utilizes relatively smaller catalyst particles in the last zone of a plurality of reaction zones.

3,622,646

PROCESS FOR CRACKING CYCLOOLEFINS

Lionel T. Wolford, and Ralph Levine, both of Freehold, N.J., assignors to Cities Service Company

Filed June 11, 1969, Ser. No. 832,479
Int. Cl. C07c *11/12*
U.S. Cl. 260—680 C **14 Claims**

Processes are described for the production of alpha, omega-alkadienes by subjecting cycloalkenes to thermal cracking in the presence of an ammonia or amine regulator. The presence of such regulator is shown to inhibit secondary reactions which produce byproducts having boiling points close to that of the desired alpha, omega-alkadiene, thus facilitating the recovery of high-purity diene by distillation.

3,622,647

MANUFACTURE OF ALKENE FROM ALKANE VIA BORON ESTERS

Matthew A. McMahon, and Alfred Arkell, both of Wappingers Falls, N.Y., assignors to Texaco Inc., New York, N.Y.

Filed Sept. 11, 1969, Ser. No. 857,199
Int. Cl. C07c *1/20;* **C07b** *3/00;* **C07f** *5/04*
U.S. Cl. 260—682 **7 Claims**

Manufacture of alkene from alkane, said alkene of an equal number of carbons as its alkane precursor, comprising contacting alkane with oxygen in the presence of a boric acid at an elevated temperature, spearating the resultant alkylborate esters from the reaction product, pyrolyzing said alkylborates in an inert atmosphere, preferably in the presence of a methanol or trimethylborate and recovering the formed alkene from the pyrolysis mixture, said recovery preferably including contacting said formed alkene with silica gel.

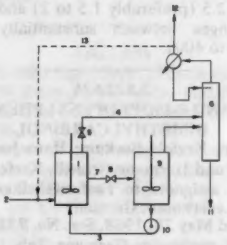
3,622,648

DIMERIZATION OF OLEFINS

Karl Schloemer, Ludwigshafen am Rhine; Hugo Kroeper, Heidelberg, and Hans-Martin Weitz, Frankenthal Upper Palatinate, all of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen am Rhine, Germany

Filed May 17, 1968, Ser. No. 729,987
Claims priority, application Germany, May 27, 1967, P 16 18 168.3
Int. Cl. C07c *3/20*
U.S. Cl. 260—683.15 **9 Claims**

An improved process for the dimerization of olefins in the presence of alkali metal catalysts at 60° to 200° C. and at atmospheric pressure up to 300 atmospheres, catalysts being used which have been derived from an alkali metal and an organic compound containing one or more than one carbonyl group. The process is particularly suitable for effective and selective dimerization of propylene to 4-methylpenetene-1.



Some of the dimers obtained are suitable as antiknock additives and for the production of polymers.

3,622,649

DIMERIZATION OF PROPYLENE TO 2,3-DIMETHYLBUTENES

Harold E. Swift, Gibsonia, and Ching-Yong Wu, O'Hara Township, Allegheny County, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 15, 1969, Ser. No. 850,642
Int. Cl. C07c *3/18*
U.S. Cl. 260—683.15 **9 Claims**

Propylene is converted to a mixture of C_6 olefins with high efficiency, usually over 70 percent, to 2,3-dimethylbutenes using a highly specific catalyst system and a highly specific solvent at a temperature less than about 10° C. The catalyst system comprises $NiCl_2$, triisopropylphosphine and an aluminum alkyl chloride or dichloride. The solvent is a dichlorinated benzene.

3,622,650

RUBBER REINFORCING COMPOSITIONS

Gregor Berstein, Newton, and Bram B. Boonstra, Sharon, both of Mass., assignors to Cabot Corporation, Boston, Mass.

Filed Feb. 4, 1969, Ser. No. 796,541
Int. Cl. C08l *17/08;* **C08c** *11/10, 11/18*
U.S. Cl. 260—763 **12 Claims**

Superior rubber reinforcing compositions comprising mixtures of carbon black and silica are provided by fluid energy milling of the combined ingredients. Among other attributes the resulting reinforcing composition display improved cut growth resistance characteristics in natural rubber formulations.

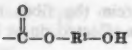
3,622,651

NOVEL POLYMER HAVING PENDENT ESTER GROUPS FOR LOW TEMPERATURE BAKE COATINGS

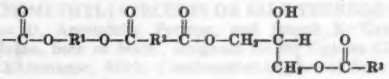
Joseph Anthony Vasta, Woodbury, N.J., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of application Ser. No. 811,196, Mar. 27, 1969, now abandoned. This application Dec. 1, 1969, Ser. No. 881,278
Int. Cl. C08f *15/34*
U.S. Cl. 260—856 **22 Claims**

A novel polymer useful for forming coating compositions and a process for making this polymer are the subjects of this invention; the novel polymer has a backbone of polymerized ethylenically unsaturated monomers and has attached directly to its backbone ester groups of the following structure



and



or an isomer thereof, wherein R^1, R^2 and R^3 are hydrocarbon radicals; this novel polymer is particularly useful in forming high quality coating compositions which can be baked into tough, durable films at a relatively low temperature.

3,622,652

EPDM POLYMERS MODIFIED BY GRAFT POLYMERIZATION

Parviz Hamed, Cuyahoga Falls, and Everett T. McDonel, Brecksville, both of Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

Continuation-in-part of application Ser. No. 491,409, Sept. 29, 1965, now abandoned. This application Dec. 19, 1967, Ser. No. 691,718

Int. Cl. C08f *1/04, 15/00*

U.S. Cl. 260—878 R **1 Claim**

Alkyl acrylates and methacrylates are graft polymerized onto ethylene-propylene-diene rubbery elastomers as a backbone. The graft polymers are sulfur curable and have superior abrasion resistance compared to nongrafted ethylene-propylene-diene elastomers.

3,622,653

GRAFTS OF VINYL OR VINYLIDENE MONOMERS ONTO POLYMERIZED CYCLOPENTENE

Herbert Schuster, Cologne-Stammheim; Karl Nutzel, Opladen; Karl Dinges, Odenthal, and Harry Rohr, Leverkusen, all of Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 28, 1969, Ser. No. 803,416

Claims priority, application Germany, Mar. 13, 1968, P 17 20 802.5

Int. Cl. C08f *15/40, 19/18*

U.S. Cl. 260—881 **5 Claims**

Thermoplastic-elastic moulding compositions from 5 to 50 percent by weight of a polypentenamer as a grafting base and from 95 to 50 parts by weight of a vinyl or vinylidene compound and a process for producing these compositions by graft polymerizing the vinyl or vinylidene compound in the presence of the polypentenamer e.g. in emulsified form.

3,622,654

METHOD FOR HYDROPHOSPHINYLATION

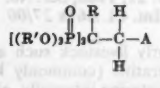
Kailash C. Pande, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 5, 1968, Ser. No. 702,778

Int. Cl. C07f *9/40;* **A01n** *9/36*

U.S. Cl. 260—969 **8 Claims**

Activated alkenes or alkynes are hydrophosphinylated by a method comprising reacting an activated alkene or alkyne with a trialkyl phosphite in the presence of an ammonium halide so as to produce phosphonates useful in resin production. Some new phosphonates are also produced by this process which have the formula



where R is hydrogen, alkyl having up to six carbon atoms or phenyl; R′ is alkyl having up to twelve carbon atoms; and A is an electron-withdrawing substituent. These phosphonates have biological activity.

3,622,655

AQUEOUS SLURRY PROCESS FOR DRYING OF SOLVENT WET DOUBLE BASE SMOKELESS POWDER

John O. Bonyata, Mountain Lakes, and Lynn G. Rohrbaugh, Lake Hopatcong, both of N.J., assignors to Hercules Incorporated, Wilmington, Del.

Filed Apr. 14, 1969, Ser. No. 816,022

Int. Cl. C06b *21/02*

U.S. Cl. 264—3 **9 Claims**

A process for rapid drying of solvent-wet double-base smokeless powder is provided in which most of the solvent entrapped in the double-base powder particles manufactured by the conventional solvent process is extracted from the powder into the aqueous phase of an aqueous slurry of the powder. The solvent-extracted smokeless powder is then dried employing rapid-drying techniques with no substantial loss of energetic plasticizer.

3,622,656

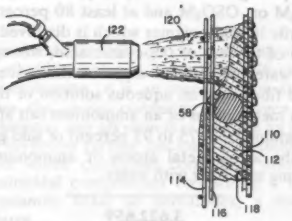
METHOD OF MANUFACTURING REINFORCED WALL STRUCTURE

David B. Dewey, Jr., Rancho Sante Fe, and Norman W. Schofield, San Diego, both of Calif., assignors to General Dynamics Corporation, San Diego, Calif.

Filed May 26, 1969, Ser. No. 827,636

Int. Cl. B28b *19/00, 23/02;* **E04b** *1/16*

U.S. Cl. 264—35 **5 Claims**



A large buoy construction of relatively thin wall composite material, which walls are integrally formed and interconnected by a reinforcing matrix frame comprising reinforcing members sandwiched between layers of screens, to which the cement-type material can be applied by use of power equipment in a rapid application and thorough penetration into the matrix to accomplish onsite formless molding of integral, unitary structures having complex shapes and junctions.

3,622,657

METHOD FOR FORMING AND COOLING THERMOPLASTIC FILM

Howard C. North, Westfield, N.J., and Charles W. Williamson, Seabrook, Tex., assignors to Esso Research and Engineering Company

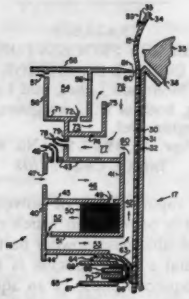
Filed Sept. 24, 1969, Ser. No. 860,610

Int. Cl. B29c *17/00, 25/00*

U.S. Cl. 264—89 **8 Claims**

A method for forming and cooling thermoplastic film. The film is extruded downwardly in a molten condition and passed through a cooling cell containing a cooling liquid. A first stream of cooling liquid is passed in contact with lower part of the film at a high velocity in countercurrent turbulent flow. A second stream of cooling fluid is passed in contact with the upper part of the film at a low velocity in cocurrent laminar flow. The first and second streams are withdrawn from a transistion zone adjacent to the surface of the film at a medial point of the film. The film may be in tubular form

and passed over a cooling mandrel positioned within the cooling cell. Cooling air is passed upwardly through the in-



side of the film to expand the film and prevent condensation of volatiles on the mandrel.

3,622,658

METHOD OF TREATING ACRYLONITRILE SYNTHETIC FIBER

Kazumi Nakagawa; Keitaro Shimoda, and Keijiro Kuratani, all of Saidaiji, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Continuation of application Ser. No. 588,282, Oct. 21, 1966, now abandoned. This application Sept. 11, 1969, Ser. No. 857,653

Int. Cl. D01f 7/00; D06p 5/00

U.S. Cl. 264—182 **1 Claim**

A method of treating acrylonitrile synthetic fibers which involves preparing a solution of acrylonitrile polymer containing $-SO_3M$ or $-OSO_3M$ and at least 80 percent by weight of acrylonitrile in said polymer which is dissolved in an aqueous solution of the salt of thiocyanic acid, wet spinning said solution in water of a dilute aqueous thiocyanate solution, treating said fiber with an aqueous solution of the inorganic salt of alkali metal atoms or an ammonium salt at a pH of 2.2 to 4.0 to combine from 75 to 95 percent of said groups in the fiber with the alkali metal atoms or ammonium ions, and finally washing said fiber with water.

3,622,659

THERMAL GRADIENT METHOD FOR MAKING THERMOPLASTIC MATRICES

John Sonia, Califon; John B. Wheeler, III, Somerville; Thomas E. Hayes, Highland Park, and Robert B. Petrochko, Somerville, all of N.J., assignors to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of application Ser. No. 721,942, Apr. 17, 1968, now abandoned. This application Feb. 17, 1969, Ser. No. 799,942

Int. Cl. B29d 17/00; B29c 1/04

U.S. Cl. 264—220 **8 Claims**

An improved process for making thermoplastic matrices wherein a thermal gradient is established between the molding interface and the back of a thermoplastic matrix blank whereby the viscosity at the molding interface is high enough to resist flow into the original and the temperature at the back is sufficiently high to permit flow of molten thermoplastic.

3,622,660

MULTI-STAGE DRAWING PROCESS FOR POLYBENZIMIDAZOLE STRAND MATERIAL

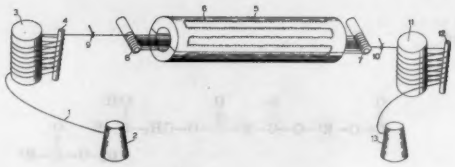
George F. Ecker, 1857 Shiff Court, Toms River, N.J., and Thomas Carl Bohrer, 67 Canoe Broad Way, Summit, N.J.

Continuation-in-part of application Ser. No. 520,743, Jan. 14, 1966, now abandoned. This application Oct. 23, 1968, Ser. No. 769,862

Int. Cl. D02j 1/22

U.S. Cl. 264—290 R **11 Claims**

Foamable polybenzimidazole fiber or yarn is hot drawn without foaming at a draw ratio above about 1.5:1 and at a drawing speed in excess of about 20 meters per minute in a drawing zone wherein the fiber is radiantly heated and wherein the draw is effected on at least two passes through



the zone, the drawn on any one pass being less than about 1.5:1.

3,622,661

ORAL PREPARATIONS

William James King, River Edge, N.J., and Glendon Richard Miller, Wichita, Kans., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of application Ser. No. 751,352, Aug. 9, 1968, now abandoned. This application July 13, 1970, Ser. No. 54,594

Int. Cl. A61r 7/16

U.S. Cl. 424—50 **9 Claims**

Oral preparation containing dextranase and as binder, Irish moss or gum tragacanth.

3,622,662

STABLE DENTAL CREAM

Francis D. Roberts, W. Millington, and James Norfleet, Plainfield, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Apr. 21, 1969, Ser. No. 818,059

Int. Cl. A61r 7/16

U.S. Cl. 424—54 **16 Claims**

Dental cream containing polishing agent, benzyl alcohol and clove or mint flavor. Zinc oxide, zinc phosphate, or alkali metal phosphate having a pK_a of at least 7 in water at 25° C. (such as trisodium phosphate), is present to stabilize and prevent separation of the cream.

3,622,663

PURIFICATION OF VIRUSES ON TREATED CALCIUM DIHYDROGEN ORTHOPHOSPHATE MONOHYDRATE ADSORBENT

Milton Lapidus, Rosemont, Pa., assignor to American Home Products Corporation, New York, N.Y.

Original application June 13, 1968, Ser. No. 736,561, now Patent No. 3,509,070, which is a continuation-in-part of application Ser. No. 497,540, Oct. 18, 1965, now abandoned, which is a continuation-in-part of application Ser. No. 396,726, Sept. 15, 1964, now abandoned. Divided and this application Feb. 11, 1970, Ser. No. 10,644

Int. Cl. A61r 27/00; B01j 11/82; C01b 25/32

U.S. Cl. 424—89 **5 Claims**

This invention relates to an alkali treated calcium dihydrogen orthophosphate monohydrate adsorbent. Further, it concerns an alkali and trimetaphosphate treated calcium dihydrogen orthophosphate monohydrate adsorbent. Still further, it relates to the processes for the preparation of these adsorbents and to their use in virus purification.

3,622,664

TREATMENT OF INFECTIOUS KERATITIS IN ANIMALS WITH SODIUM ARSENITE

John A. Brown, 909 N. Alameda, Las Cruces, N. Mex.

Filed Nov. 21, 1968, Ser. No. 777,872

Int. Cl. A61k 27/00

U.S. Cl. 424—133 **17 Claims**

Animals, particularly livestock such as cattle and sheep, having infectious keratitis (commonly known as pink-eye) are treated by administering internally, either by intramuscular injection or orally, effective amounts of sodium arsenite. When administered orally the sodium arsenite can be ad-

mixed with the animals' salt supply or feed and when provided to the animals on a regular basis is effective in preventing infection by the disease.

3,622,665

PROCESS FOR TREATING GRAM-NEGATIVE BACTERIAL DISEASES WITH PENTAKIS [N-SULFOMETHYL] CIRCULIN OR SALT THEREOF

Alexander D. Argoudelis, Portage, and Joseph E. Grady, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich. Continuation-in-part of Ser. No. 687,488, Dec. 4, 1967, which is a continuation-in-part of application Ser. No. 427,957, Jan. 25, 1965, now abandoned. This application July 2, 1969, Ser. No. 838,645

Int. Cl. A61k *27/00*

U.S. Cl. 424—177 6 Claims

Pentakis[N-(sulfomethyl)]circulin and its pharmacologically acceptable cationic salts consisting of sodium, potassium, lithium, ammonium, triethylamine, N-ethylpyridine and procaine, prepared in unit dosage form in combination with a pharmaceutical carrier for systemic, local and topical administration to animals animals and mammals, including avian species for treatment of diseases caused by gram-negative organisms.

3,622,666

METHODS FOR TREATING BACTERIAL INFECTIONS WITH PHRENOSIN

Elton S. Cook, Cincinnati, Ohio, and Norbert J. Berberich, Jr., Covington, Ky., assignors to Stanley Drug Products, Inc., Portland, Oreg.

Filed Mar. 4, 1968, Ser. No. 709,937

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 5 Claims

A variety of substances are reported which alter host resistance to cocci bacterial infections. Nevertheless drugs which induce a high degree of resistance to these infections when administered prophylactically are not in wide use. Drugs which confer immunity to these infections for more than a week after administration are virtually unknown. Antimicrobials have been found which are effective in inducing resistance to infections due to cocci when administered prophylactically.

3,622,667

NEW NEMATOCIDAL COMPOSITIONS

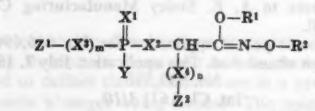
Sidney B. Richter, Chicago, and Ephraim H. Kaplan, Skokie, both of Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

Filed Feb. 13, 1969, Ser. No. 799,115

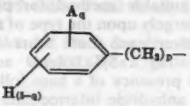
Int. Cl. A01n *9/36*

U.S. Cl. 424—211 8 Claims

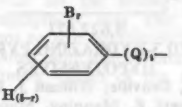
This invention discloses nematocidal compositions comprising an inert carrier and, as an essential active ingredient, in a quantity toxic to nematodes, a compound of the formula



wherein R^1 and R^2 are alkyl; X^1, X^2, X^3 and X^4 are independently selected from the group consisting of oxygen and sulfur; m and n are each integers from 0 to 1; Z^1 is selected from the froup consisting of alkyl, alkenyl and



wherein A is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino, q is an integer from 0 to 5, and p is an integer from 0 to 3; Z^2 is selected from the group consisting of hydrogen and Z^1, provided that when Z^2 is hydrogen then n is 0; and Y is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, amino, alkylamino, dialkylamino and



wherein B is selected from the group consisting of alkyl, alkenyl, alkoxy, alkylthio, halogen, nitro, alkylsulfoxide, alkylsulfone and dialkylamino, r is an integer from 0 to 5, Q is selected from the group consisting of oxygen, sulfur, alkylene, alkyleneoxy and alkylenethio, and t is an integer from 0 to 1. This invention further discloses a method for control of nematodes which comprises contacting said nematodes with a nematocidal composition comprising a inert carrier and, in a quantity toxic to nematodes, a compound as described above.

3,622,668

METHOD OF PROMOTING SCAR-FREE HEALING OF SKIN LACERATIONS

Joe B. Moss, 8405 Emmet, Omaha, Nebr., and Clifford F. Moss, deceased, late of Moville, Iowa (by Joe B. Moss, assignee)

Continuation of application Ser. No. 704,982, Feb. 2, 1968, now abandoned , which is a continuation of application Ser. No. 390,751, Aug. 19, 1964, now abandoned. This application Aug. 27, 1969, Ser. No. 857,617

Int. Cl. A61r *15/02*

U.S. Cl. 424—237 2 Claims

This invention relates to medications for and the treatment of skin lacerations. In particular, this invention relates to a novel medication that may be applied as an abluent lotion directly upon lacerated skin tissue of wounded animals so as to promote scar-free healing thereof.

3,622,669

5β-TAUROCHOLENIC ACIDS AND 5β-TAUROCHOLADIENIC ACIDS IN COMPOSITIONS FOR REDUCING THE CONCENTRATION OF CHOLESTEROL AND LIADS IN BLOOD SERUM

Arthur A. Patchett, Cranford, and John Hannah, Matawan, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 23, 1967, Ser. No. 677,080

Int. Cl. A61k *27/00*

U.S. Cl. 424—238 2 Claims

5β-Taurocholenic acids wherein the double bond may be either in the 22-position of the aliphatic chain or within the

cholane ring; and 5β-taurocholadienic acids wherein one double bond is in the 22-position of the chain and the second is within the cholane nucleus; and the salts, esters and amide derivatives thereof. The products are hypocholesterolemics and hypolipemics which have utility in the treatment of conditions associated with blood lipid deposition.

The choice of a suitable method for preparing the final products depends largely upon the type of unsaturation in the final product; however, each route bears in common the terminal step of treating a 5β-cholenic acid with an alkyl haloformate in the presence of a base followed by the reaction of the mixed anhydride intermediate thus formed with taurine in a basic medium to yield a 5β-taurocholenic acid salt or 5β-taurocholadienic acid salt and, if desired, the salt thus obtained may then be converted to its free acid, ester or amide by conventional means.

3,622,670

METHOD OF INDUCING OVULATION

Richard A. Edgren, Berwyn, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Aug. 22, 1969, Ser. No. 852,447

Int. Cl. A61k *17/06*

U.S. Cl. 424—238 **4 Claims**

Compositions comprising 13-alkyl-16α-hydroxy-3,17-dioxygenated-gona-1,3,5(10)-trienes, especially 13-ethylgona-1,3,5(10)-triene-3,16α,17β-triol, and a carrier are useful to induce ovulation in warm-blooded anovulatory vertebrates after administration.

3,622,671

SUBSTITUTED 3-HYDRAZINO PYRIDAZINES AS HYPOTENSIVES

Paul L. Anderson, Denville; William J. Houlihan, Mountain Lakes, and Robert E. Manning, Mountain Lakes, all of N.J., assignors to Sandoz-Wander, Inc., Hanover, N.J.

Filed Mar. 24, 1969, Ser. No. 809,944

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **3 Claims**

Certain 4-amino-6-chloro-3-hydrazino pyridazines have been found to be useful as hypotensives.

3,622,672

SYNERGISTIC MIXTURE OF 5-METHYL 7-BROMO 8-HYDROXY QUINOLINE AND N-DODECYL SULPHATE OF 5-METHYL 8-HYDROXY QUINOLINE

Eugene Leroi; Albert Beaufour, and Gerard Beaufour, all of Paris, France, assignors to Societe D'Etudes De Produits Chimiques, Issy-les-Moulineaux, France

Continuation-in-part of Ser. No. 342,776, Feb. 5, 1964, now abandoned, which is a continuation-in-part of application Ser. No. 660,064, Aug. 11, 1967, now abandoned. This application Jan. 30, 1969, Ser. No. 801,228

Int. Cl. A61k *27/00*

U.S. Cl. 424—258 **1 Claim**

A mixture of n-dodecyl sulfate of 5-methyl-8-hydroxy quinoline alone and 5-methyl-7-bromo-8-hydroxy quinoline as a pharmaceutically active material for administering bacteriostatic, parasiticidic or fungistatic dosage to living bodies.

3,622,673

4-(1,4,5,6-TETRAHYDROZEPINO 4,5-B INDOL-3(2H)-YL-BUTYROPHENON COMPOSITIONS AND PROCESS OF TREATMENT MENTAL OR EMOTIONAL DISORDERS

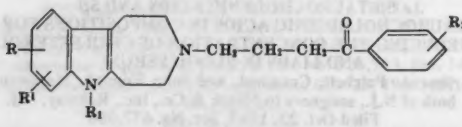
Jackson B. Hester, Jr., Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Nov. 14, 1968, Ser. No. 775,957

Int. Cl. A61k *27/00*

U.S. Cl. 424—274 **5 Claims**

Compounds of the formula



and the pharmacologically acceptable acid addition salts thereof wherein R and R^1 are hydrogen or methoxy; R_1 is hydrogen or methyl; and R_2 is fluorine prepared in unit dosage form for oral, rectal or parenteral administration having tranquilizing, antipsychotic, sedative, anticonvulsant, antiemetic and anorexigenic activity and a process for treating mental and emotional disorders by administering the foregoing compositions at a dosage of from 0.5 to 50 mg./kg./day.

3,622,674

ANTICOCCIDIAL ACTIVITY OF METAL CHELATES OF SUBSTITUTES BIS-THIOSEMICARBAZONES OF CYCLIC 1,2-DIKETONES

Kenneth Butler, Old Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

Original application Aug. 30, 1967, Ser. No. 671,527, which is a division of application Ser. No. 407,212, Oct. 28, 1964, now Patent No. 3,382,266, dated May 7, 1968. Divided and this application May 6, 1969, Ser. No. 822,301

Int. Cl. A61k *27/00*

U.S. Cl. 424—289 **4 Claims**

Substituted bis-thiosemicarbazones of cyclic 1,2-diketones and metal chelates thereof effective in the control and treatment of coccidiosis.

3,622,675

ANOREXIGENIC COMPOSITION AND METHOD

Herbert Koppe; Gerhard Ludwig, and Karl Zeille, all of Ingelheim/Rhine, Germany, assignors to Boehringer Ingelheim GmbH, Ingelheim am Rhine, Germany

Original application Mar. 24, 1965, Ser. No. 442,539, now abandoned. Divided and this application Apr. 28, 1969, Ser. No. 819,939

Int. Cl. A61k *27/00*

U.S. Cl. 424—304 **2 Claims**

Anorexigenic compositions comprising a 1-phenyl-2-(lower alkyl-amino)-lower alkanone-(1) or a nontoxic acid addition salt thereof aS an active ingredient, and a method of curbing the appetite of warmblooded animals therewith.

3,622,676

SMOKING SUPPRESSION

Constance Anthony D'Alonzo, Wilmington, Del., assignor to William Anthony Drucker, Washington, Conn. and Howard Ira Maibach, Kentfield, Calif., part interest to each

Continuation-in-part of application Ser. No. 236,414, Nov. 8, 1962, now abandoned , Continuation-in-part of application Ser. No. 342,227, Feb. 3, 1964. This application Nov. 20, 1968, Ser. No. 777,461

Int. Cl. A61k *27/00*

U.S. Cl. 424—325 **3 Claims**

A method of treating the habit of tobacco smoking by suppressing the pleasure associated with the taste of smoke is disclosed in which a bis-(B-di-lower alkylaminoethyl) disulfide composition is administered over a period of several days to generate a feeling of distaste and discomfort when smoking.

3,622,677

COMPRESSED TABLETS CONTAINING COMPACTED STARCH AS BINDER-DISINTEGRANT INGREDIENT

Rolland W. P. Short, and Frank Verbanac, both of Decatur, Ill., assignors to A. E. Staley Manufacturing Company, Decatur, Ill.

Continuation-in-part of application Ser. No. 646,496, June 16, 1967, now abandoned. This application July 7, 1969, Ser. No. 839,590

Int. Cl. A61j *3/10*

U.S. Cl. 424—361 **8 Claims**

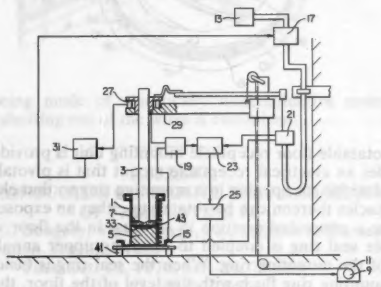
A directly compressed tablet containing as a binder-disintegrant ingredient, a partially cold-water soluble, cold-water swelling starch material derived from compacted granular starch, e.g. compacted native corn starch. The compacted granular starch is a superficially dry, free-flowing powder in which the starch is in the form of a mixture of birefringent granules and nonbirefringent fragments of granules, in which some aggregates of granules and fragments are present. The use of the starch binder-disintegrant ingredient allows active ingredients, e.g. pharmaceuticals, to be tabletted by direct compression.

ELECTRICAL

3,622,678
ELECTRODE FEED ARRANGEMENTS

Alec George Allen, Sutton Coldfield, England, assignor to Associated Electrical Industries Limited, London, England

Filed May 14, 1969, Ser. No. 824,608
Claims priority, application Great Britain, May 14, 1968, 22,855/68
Int. Cl. F27d *11/10*; H05b *3/60*
U.S. Cl. 13—13 10 Claims

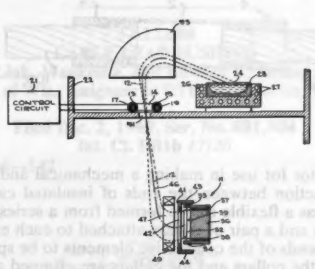


An arrangement for controlling the electro-slag process of producing ingots in which the actual growth of the ingot is compared with a required growth and a difference signal produced and utilized to vary the applied voltage so that the electrode is consumed at a rate which will give the required growth of the ingot.

3,622,679
HEATING SYSTEM FOR ELECTRON BEAM FURNACE

Kurt D. Kennedy, Berkeley, Calif., assignor to Air Reduction Company, Incorporated, New York, N.Y.

Filed Sept. 29, 1970, Ser. No. 76,522
Int. Cl. H05b *5/14*
U.S. Cl. 13—31 5 Claims

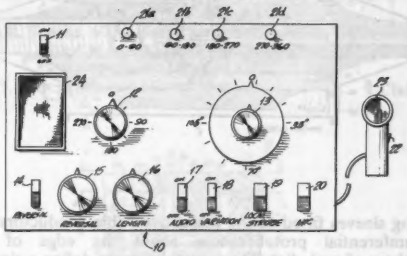


An electron beam furnace heating system is described comprising an electron beam gun and four solenoidal coils positioned to deflect the electron beam in a predetermined manner onto a target being heated. The solenoidal coils define a quadrangular space through which the beam passes and are energized such that oppositely disposed ones of the coils produce magnetic fields with lines of force in their cores extending in the same direction. By varying the current through the coils, the electron beam may be deflected in different directions and by different amounts to thereby control the position of impact of the electron beam on the target being heated.

3,622,680
DOPPLER RADIO DIRECTION FINDING, TESTING AND TEACHING DEVICE

Joseph Palmieri, 505 Gibbs Pond Road, Lake Ronkonkoma, Long Island, N.Y.

Filed Oct. 10, 1969, Ser. No. 865,311
Int. Cl. G01s *7/40*
U.S. Cl. 35—10.4 7 Claims

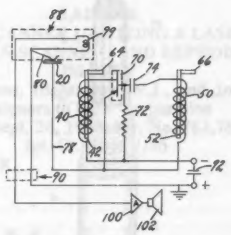


An auxiliary device for the testing of doppler radio direction finding equipment may also simulate various navigational situations on that equipment for the purpose of instruction. The testing and instructional device operates from an internal timing circuit of the equipment and is synchronized with it.

3,622,681
ELECTRONIC MUSICAL INSTRUMENT EMPLOYING FREE-BEAM ELECTROMECHANICAL RESONATORS AND A HAND-HELD BATON

Alvin S. Hopping, Nolan's Point, Lake Hopatcong, N.J.

Filed May 2, 1969, Ser. No. 821,226
Int. Cl. G10h *3/00*, *3/08*
U.S. Cl. 84—1.01 4 Claims



An electronic musical instrument in which the output of free-beam electromechanical tone generators is coupled from a keyboard to an amplifier by a hand-held baton which is contacted with the keyboard to select the desired tone.

ERRATUM

For Class 165—9 see:
Patent No. 3,622,737

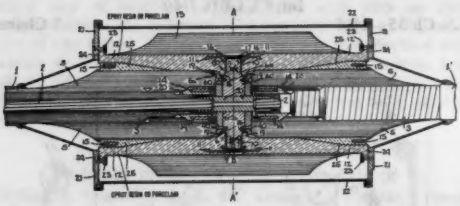
3,622,682
STOP JOINT FOR HIGH-VOLTAGE, OIL-FILLED CABLE

Vittorio Buroni, Milan, Italy, assignor to Industrie Pirelli S.p.A.

Filed Sept. 11, 1970, Ser. No. 71,604
Claims priority, application Italy, Sept. 18, 1969, 22184 A/69
Int. Cl. H02g *15/24*
U.S. Cl. 174—22 R 14 Claims

A stop joint for joining together a pair of high-voltage oil-filled electrical power cables, and comprising a locking

mechanism for securing together the ends of the cable conductors and further comprising a rigid insulator which interconnects the conductors where they are joined, to the outer casing of the cables thereby to absorb the mechanical stresses caused by heating and cooling of the conductors. The locking mechanism comprises a pair of circular discs



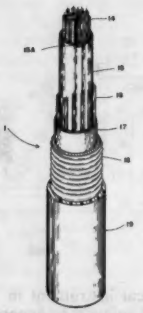
having sleeves fitted to the respective cable conductors and circumferential protuberances about the edge of the periphery of each disc. These protuberances define a circumferential projection when the discs are together. A ring which can be dissembled is provided about the discs and the ring contains an internal groove which accommodates the projection and holds the discs together.

3,622,683

TELEPHONE CABLE WITH IMPROVED CROSSTALK PROPERTIES

Walter L. Roberts, Hickory, and Frederic N. Wilkenloh, Conover, both of N.C., assignors to Superior Continental Corporation, Hickory, N.C.

Filed Nov. 22, 1968, Ser. No. 778,073
Int. Cl. H01b *11/08*
U.S. Cl. 174—36 **37 Claims**



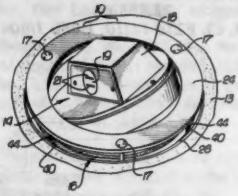
Disclosed herein is an economical telephone cable structure and method of making same, such cable structure possessing improved crosstalk properties. A plurality of insulated electrical conductors (pairs), of an otherwise conventional telephone cable design are divided into at least two portions by plastic-coated metal foil strip or tape. Measurements between pairs, divided by this plastic-coated metal foil, of unwanted energy transferred from one conductor to another by means of mutual inductive, capacity, or conductive coupling (crosstalk), shows greatly improved properties over undivided cable pairs or divided cable pairs of prior art. By dividing electrical conductor telephone pairs within a telephone cable structure with plastic-coated metal foil, the crosstalk properties are so vastly improved that a greater spacing between repeaters can be designed into a telephone cable system, as compared to a cable system employing prior art divided or undivided cable pairs.

3,622,684

ROTATABLE FLOOR RECEPTACLE MOUNTING UNIT

Paul R. Press, Whittier, Calif., assignor to C. W. Cole & Co. Inc., El Monte, Calif.

Filed Oct. 15, 1970, Ser. No. 81,014
Int. Cl. H02g *3/08*
U.S. Cl. 174—48 **9 Claims**



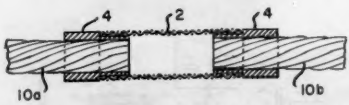
A rotatable floor receptacle mounting unit is provided that includes an electrical receptacle mount that is pivotally supported within an opening in a mounting ring so that electrical receptacles thereon can be rotated to either an exposed position or a concealed position in a recess in the floor. An adjustable seal ring is coupled to form the upper annular surface of the mounting ring. When the seal ring is fastened to the mounting ring flush with the level of the floor, the inner peripheral surface thereof overlaps an annular shoulder formed on the periphery of the mount to enable a sealing gasket to be compressingly engaged therebetween. When it is desired to flip over the receptacle mount the seal ring is released and raised to provide sufficient clearance for enabling the mount to be swung on its pivotal support past the inner peripheral surface of the seal ring. The seal ring is then again lowered and fastened flush with the level of the floor to seal the mount in its new position.

3,622,685

FLEXIBLE ELECTRIC CONNECTOR

Robert R. Crowl, R.D. #4, Box 48-B, Belle Vernon, Pa.

Filed Mar. 25, 1970, Ser. No. 22,498
Int. Cl. H02g *15/08*
U.S. Cl. 174—84 C **2 Claims**



A connector for use in making a mechanical and an electrical connection between the ends of insulated cable. The connector has a flexible sleeve formed from a series of interwoven wires and a pair of collars attached to each end of the sleeve. The ends of the conductive elements to be spliced are passed into the collars and the collars are crimped about the conductive elements to form the connection.

3,622,686

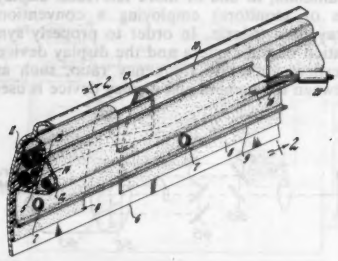
CONDUIT FOR HOUSING A PLURALITY OF ELECTRIC WIRES AND ASSOCIATED CONNECTORS

Edward A. Neirinck, Mt. Clemens, Mich., and Ralph L. Johnson, Cape Coral, Fla., assignors to General Motors Corporation, Detroit, Mich.

Filed May 12, 1970, Ser. No. 36,654
Int. Cl. H02g *3/04*
U.S. Cl. 174—97 **4 Claims**

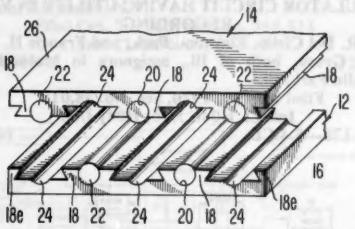
A casement and protective device for the wires employed in a motor vehicle which device includes at least two compartments. One of the compartments being adapted to contain all of the original wiring and having openings therein for the removal of selected wires, and a second compartment in-

tegral with the first compartment and having means therein for receiving the removed or replaced wires, the entire



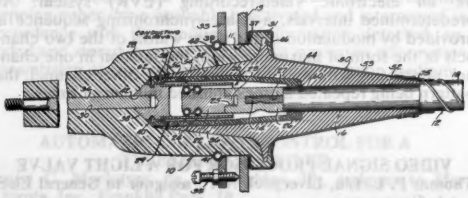
device being made of electrically nonconductive material whereby shorting out of the wires is minimized.

3,622,687
MULTICONDUCTOR COMPOSITE BELT AND METHOD OF FABRICATING IT
Frederic C. Doughty, Valley Forge, Pa., assignor to Burroughs Corporation, Detroit, Mich.
Filed Oct. 12, 1970, Ser. No. 79,860
Int. Cl. H01b *7/04*
U.S. Cl. 174—117 F **5 Claims**



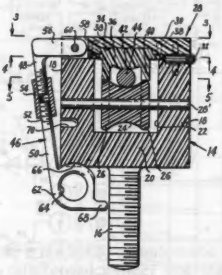
A composite electrical cable in the form of a belt, constructed by interlocking two half belts.

3,622,688
CABLE LEAD BUSHING
Edwin A. Link, Waukesha, and Edward L. Sankey, New Berlin, both of Wis., assignors to RTE Corporation, Waukesha, Wis.
Filed Dec. 2, 1969, Ser. No. 881,504
Int. Cl. H01b *17/26*
U.S. Cl. 174—142 **6 Claims**



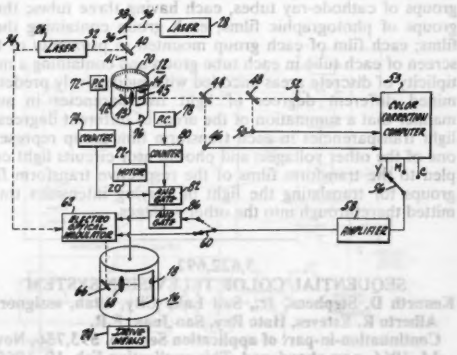
A composite bushing for terminating a high-voltage cable which has an electrical conductor, cable insulation and a semiconductive shield. The bushing including an electrically conductive assembly adapted to be electrically connected to the conductor. A sleeve of electrically insulating elastomeric material surrounding the assembly in a spaced relation thereto and extending outwardly from one end thereof, said outwardly extending portion having a passage adapted to sealingly engage the exposed cable insulation. A rigid dielectric housing bonded to the portion of the length of said sleeve around said assembly and to a portion of said assembly, an inner sleeve of electrically conductive elastomeric material provided within said nonconductive elastomeric sleeve and having a length sufficient to bridge the space between the assembly and the nonconductive sleeve. The electrically conductive sleeve having a reduced diameter section at each end to engage the assembly at one end and the cable insulation at the other end.

3,622,689
LOCKING INSULATOR
James R. Sparks, 6730 Hedge Ave., Sacramento, Calif.
Filed Mar. 13, 1970, Ser. No. 19,405
Int. Cl. H01b *17/16*
U.S. Cl. 174—168 **9 Claims**



An insulating body is provided with a space therein in which is arranged a roller over which the cable is adapted to be moved to be pulled taut, whereupon a clamping device is movable downwardly and clamped in position and exerts a force on both the cable and the roller to prevent any longitudinal movement of the cable or rotational movement of the roller.

3,622,690
ELECTRONIC SCANNER UTILIZING A LASER FOR THE SIMULTANEOUS SCANNING AND REPRODUCING OF IMAGES
Arthur W. Stephens, Hightstown, N.J., and John J. Walsh, Yardley, Pa., assignors to RCA Corporation
Filed Sept. 26, 1968, Ser. No. 762,785
Int. Cl. H04n *1/46*
U.S. Cl. 178—5.2 R **8 Claims**



An electronic color scanner scans original patterns such as photographs, pictures, etc. to provide a plurality of photographic film color separation negatives (or positives) of the

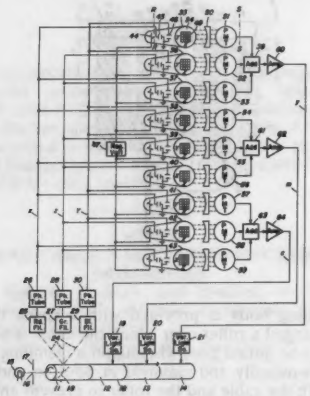
original pattern. The color separations are subsequently processed into printing plates for printing color reproductions of the original pattern. The scanner utilizes a laser that simultaneously functions to scan the original pattern as well as to provide the light for producing the color separations. The laser reproducing light is also modulated to produce pulses having sizes corresponding to the tones in the original pattern so as to provide screened color separations of the original pattern.

3,622,691

HIGH-SPEED LIGHT-RESPONSIVE TRANSFORM COMPUTER FOR A LIGHT-SENSITIVE PRINTING SYSTEM

John L. Dailey, 83 Parkridge Drive, Pittsford, N.Y.

Filed Dec. 23, 1969, Ser. No. 887,627
Int. Cl. H04n *9/02*
U.S. Cl. 178—5.2 A **21 Claims**



A light-responsive printing system including a spot of white light scanning a member having red, green and blue colors varying in densities to reflect corresponding light rays therefrom for conversion into corresponding voltages; light-sensitive elements; sources of additional white light variable to intensity in response to other voltage to shine the latter white light onto the respective elements to represent thereon the densities of printing inks of magenta, yellow and cyan colors required to duplicate the densities of the red, green and blue light, respectively, of the member as scanned; and a high-speed light-responsive transform computer for producing the other voltages, comrpising: three transforms one for each of the printing inks, each transform including three groups of cathode-ray tubes, each having three tubes; three groups of photographic films, each group containing three films; each film of each group mounted in proximity of the screen of each tube in each tube group and containing a multiplicity of discrete areas encoded with successively predetermined different degrees of light transparencies in such manner that a summation of the areas of different degrees of light transparencies in each transform film group represents one of the other voltages; and photosensor circuits light coupled to the transform films of the respective transform film groups for translating the light of varying intensities transmitted therethrough into the other voltages.

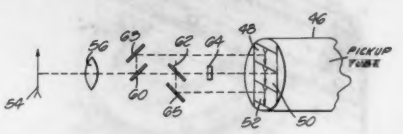
3,622,692

SEQUENTIAL COLOR TELEVISION SYSTEM

Kenneth D. Stephens, Jr., Salt Lake City, Utah, assignor to Alberto R. Esteves, Hato Rey, San Juan, P.R.

Continuation-in-part of application Ser. No. 593,756, Nov. 14, 1966, now abandoned. This application Feb. 10, 1969, Ser. No. 804,733
Int. Cl. H04n *9/06*
U.S. Cl. 178—5.2 R **47 Claims**

There is disclosed herein a color television system, including method and apparatus, wherein a polychromatic image is separated into color components and applied to a conventional camera black and white pickup tube. The information from the camera is transmitted in any conventional way, by cable or antenna, to one or more television display devices (receivers or monitors) employing a conventional color cathode-ray tube therein. In order to properly synchronize the operation of the camera and the display devices, a particular vertical scan rate frequency ratio, such as one to three, between the camera and display device is used. In one



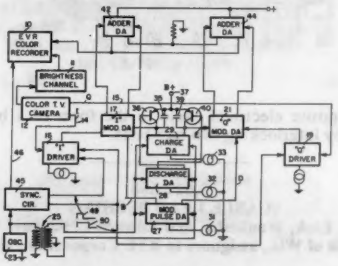
embodiment, the camera may be modified to have a 20 hertz vertical scan, and operate in conjunction with a conventional color television receiver or monitor. In another embodiment, the camera operates at its usual vertical scan rate of 60 hertz, or a lower scan rate, and is used with a receiver or monitor which has been modified to have a vertical scan rate three times that of the camera. Various embodiments are disclosed for cameras and display devices, as well as gating, encoding and decoding systems, and systems for duty cycle extension, and arrangements for color enhancement.

3,622,693

MODULATOR CIRCUIT HAVING UTILITY IN VIDEO RECORDING

Robert R. Del Ciello, Elmwood Park, and Francis H. Hilbert, River Grove, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 18, 1970, Ser. No. 38,015
Int. Cl. H04n *5/76*; H04j *3/00*
U.S. Cl. 178—5.4 CD **10 Claims**



A color signal modulator encodes or modulates two channels of color signal information as pulse-width modulated, time-division-multiplexed pulses to produce an input signal for an electronic video-recording (EVR) system. At predetermined intervals, a phase-synchronizing sequence is provided by modulation of the pulse widths of the two channels in the form of maximum width modulation in one channel, alternating with no information in the other channel, the pattern being repeated a preestablished number of times.

3,622,694

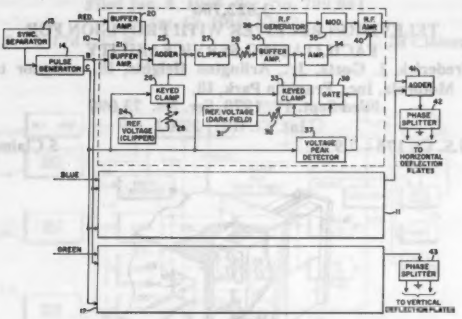
VIDEO SIGNAL PROCESSOR FOR A LIGHT VALVE

Thomas P. L. Liu, Liverpool, N.Y., assignor to General Electric Company

Filed Mar. 12, 1970, Ser. No. 18,963
Int. Cl. H04n *9/12*
U.S. Cl. 178—5.4 BD **5 Claims**

Conversion of a conventional video signal at a receiver into a signal capable of controlling formation of optical diffraction gratings with a stable black level in a light valve is accomplished by clamping the video signal to a reference amplitude level and clipping the portion of video signal below the video black level. The clipped video signal is then

clamped to a dark field reference voltage representing the black portions of the image being projected. The clipped



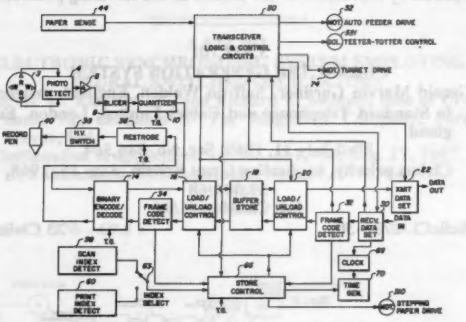
video signal thus clamped is amplitude modulated onto a radio frequency carrier which is applied to electron beam deflection apparatus of the light valve.

3,622,695

FACSIMILE SYSTEM HAVING INCREMENTAL STEPPING PAPER DRIVE ASSEMBLY

Robert H. Rugaber, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Filed Oct. 7, 1968, Ser. No. 765,511
Int. Cl. H04n *3/30, 7/12*
U.S. Cl. 178—6 **12 Claims**



A facsimile communication system including an incremental stepping paper drive assembly for advancing a document or the like past a scanning station. In combination with a binary digit encoder and buffer storage unit, the incremental stepping paper drive assembly is activated and interrupted in accordance with the amount of information detected, encoded and stored in order to maintain maximum information transmission over a limited bandwidth transmission medium.

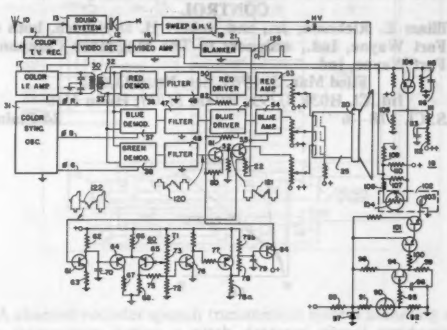
3,622,696

AUTOMATIC CONTRAST CONTROL FOR A TELEVISION RECEIVER

Ernest C. Macintyre, Jr., Woodridge, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Apr. 1, 1969, Ser. No. 811,886
Int. Cl. H04n *5/58*
U.S. Cl. 178—7.5 DC **7 Claims**

A color television receiver using direct demodulation of the color and brightness signals supplies the output of the video amplifier stage through an automatic contrast control circuit including first and second light dependent resistors. The first light dependent resistor is subjected to the ambient light surrounding the receiver and operates in a voltage divider to provide a varying voltage in accordance with variations of the ambient light level. The output of the voltage divider is supplied through an integrating circuit to the base of a field effect transistor, the output of which is utilized to drive a lamp in an isolator package in which the second light dependent resistor is located. Variations of the light emanating from the lamp cause variations in the resistance of the second light dependent resistor, which is placed in series with the output of the video amplifier to variably attenuate the signals obtained therefrom to provide automatic contrast control.



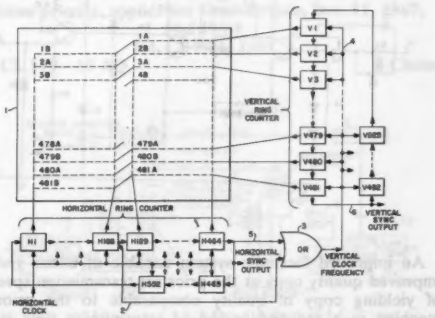
In addition, there is disclosed an automatic brightness control circuit using a differential clipper one input to which supplied with a reference voltage and the other input to which is derived from the output of the green final amplifier stage to cause a comparison of the blackest-going signal during each trace interval. The output of the differential clipper is supplied to a second integrating circuit, the outpt of which is used to vary the DC operating level of the green, blue and red driver amplifiers to form a closed loop control system. Thus, the blackest level of the signal passing through the green amplifier stage is chosen as black for the brightness control circuit and the black level of the receiver is automatically adjusted accordingly.

3,622,697

SOLID-STATE SCANNING ARRAY FOR INTERLACED SIGNALS

Lenard M. Metzger, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of application Ser. No. 739,288, June 24, 1968, now abandoned. This application July 20, 1970, Ser. No. 56,658
Int. Cl. H04n *3/14;* **H04g** *3/68*
U.S. Cl. 178—7.7 **18 Claims**



Apparatus for producing an interlaced scan of a matrix of discrete elements. The elements are arranged in vertical columns and horizontal rows, coincidentally addressed by

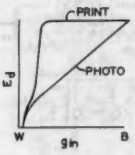
vertical and horizontal ring counters. The horizontal address connections are divided into two groups, for the right half and left half of the display. Each left-half line is connected to a vertically displaced right-half line and the vertical ring counter is incremented at the beginning and at the center of each line scan, which produces an interlaced scan. During retrace intervals the ring counters step without connecting scanning elements, and additional logic circuitry produces standard blanking and synchronizing pulse signals.

3,622,698

FACSIMILE SYSTEM WITH SELECTIVE CONTRAST CONTROL

William E. Richeson, Jr., and Robert H. Dreisbach, both of Fort Wayne, Ind., assignors to The Magnavox Company, Fort Wayne, Ind.

Filed Mar. 3, 1969, Ser. No. 803,612
Int. Cl. H03k *3/295*; H04m *11/08*; H04n *1/40*
U.S. Cl. 178—6 **24 Claims**



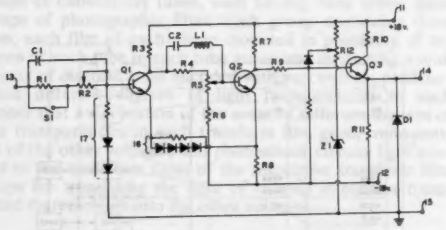
The quality of pictures and printed documents reproduced in a facsimile receiver is improved by the use of circuits in both the transmitter and receiver. These circuits provide a more linear overall response of the system when picutres are transmitted, a high contrast black on white response when printed matter is transmitted and in general provide for better quality reproductions of documents, while maintaining compatibility when operating between old and new machines. The approach is to provide a circuit at the transmitter which can be switched according to whether the documents scanned are primarily photo or printed in nature and to provide a circuit at the receiver to develop the desired copy qualities when operating under various circumstances.

3,622,699

FACSIMILE SYSTEM WITH PREEMPHASIS VARIED BY SIGNAL RATE

William E. Richeson, Jr., Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Continuation-in-part of application Ser. No. 803,612, Mar. 3, 1969. This application May 16, 1969, Ser. No. 825,230
Int. Cl. H04n *1/40*
U.S. Cl. 178—6 **3 Claims**



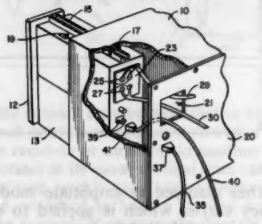
An improved facsimile system capable of either yielding improved quality copy at the prior art transmission speed or of yielding copy of quality comparable to the prior art machine in a reduced period of transmission time is disclosed. These improvement result from a modified gray-scale signal circuit at the transmitter which has its gray-scale transfer function-time dependent along with an improved receiver circuit which has a gray-scale time-dependent transfer function. These modifications cause both transmitter and receiver to tend to saturate at lower signal levels for rapidly changing gray-scale inputs.

3,622,700

TELEVISION RECEIVER WITH PROVISION FOR FACILITATING SERVICEABILITY

Frederick J. Goetz, Jr., Arlington Heights, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 17, 1970, Ser. No. 73,090
Int. Cl. H01j *29/02*
U.S. Cl. 178—7.9 **5 Claims**



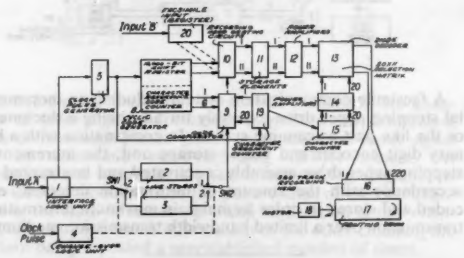
In a television receiver of the type having an electronic chasis mounted on a movable drawer for movement from an operating position located within the television cabinet to a servicing position by pulling the chassis forward through an opening to the front of the cabinet, an opening in the back of the cabinet is provided adjacent the powerline cord interlock to permit a serviceman to reach through the opening to connect a powerline cord to the chassis with the chassis in the forward position after the powerline cord interlock has been opened by movement of the chassis to the servicing position.

3,622,701

CHARACTER GENERATION SYSTEM

Gerald Marvin Gardner, Saffron Walden, England, assignor to Standard Telephones and Cables Limited, London, England

Filed July 31, 1969, Ser. No. 846,564
Claims priority, application Great Britain, Aug. 15, 1968, 39,006/68
Int. Cl. H04l *15/34*
U.S. Cl. 178—30 **23 Claims**

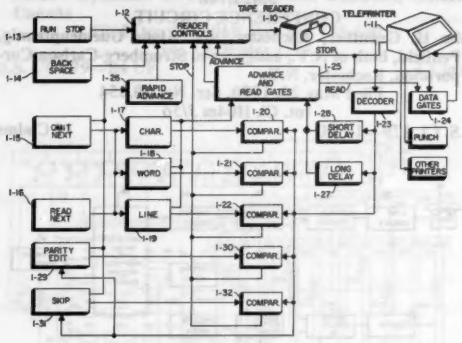


A character generation system for use with high-speed printing/display apparatus. A cyclic code generator is provided which includes electrical delay means such as an N-stage shift register for cyclically generating, in synchronism with the application of the character data to the system, an N-bit serial code representative of the characters in the system's repertoire. Means are provided for selecting the pertinent portions of the N-bit serial code corresponding to the received data and directing same to character forming means during each cycle of the generator. Further provision is made for variable character and word spacing.

3,622,702
TAPE READER AND CONTROL SYSTEM

John J. Larew, and Paul J. Moran, both of Waynesboro, Va., assignors to General Electric Company

Filed Jan. 8, 1969, Ser. No. 789,841
Int. Cl. H04l 17/12
U.S. Cl. 178—17 R 28 Claims

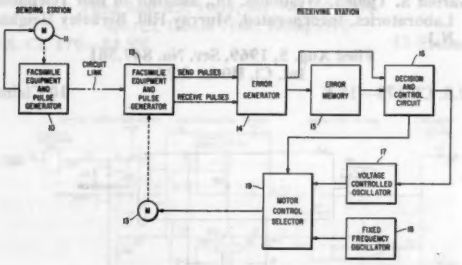


A system providing for improved local and remote control over operation of a tape reader. The controls being operative to selectively initiate and automatically terminate both the reading and omission of data, with the omission operations being effected at a higher rate than the reading operations. These controls also being operative to automatically inhibit reading operations for various time intervals when the unit is supplying a teleprinter and particular mechanical commands are being executed by the teleprinter.

3,622,703
ELECTRONIC SYNCHRONIZING SYSTEM EMPLOYING PLURAL SWITCHED OSCILLATORS

Luther W. Ricketts, Jr., and Richard E. Sweenie, both of Urbana, Ill., assignors to The Magnavox Company, Fort Wayne, Ind.

Continuation of application Ser. No. 661,394, Aug. 17, 1967, now abandoned. This application Apr. 29, 1970, Ser. No. 33,034
Int. Cl. H04n 1/36
U.S. Cl. 178—69.5 F 14 Claims

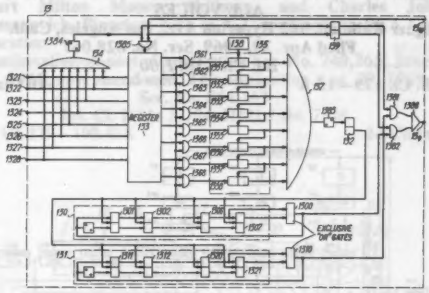


The rotational speed and position of one synchronous motor is synchronized with the rotational speed and position of another synchronous motor by electronically comparing the time occurrence of respective pulses produced by each motor. The time occurrence of pulses from the one motor relative to pulses from the other motor is used to speed up or slow down the one motor until its speed and position are synchronized with the speed and position of the other motor. When the one motor is synchronized with the other motor, the one motor may then have its speed controlled by fixed means.

3,622,704
VOCODER SPEECH TRANSMISSION SYSTEM

Gilbert M. Ferrieu, 7, rue du Clos Sourdry, Bievres, and Jean-Michel Person, rue du Parc Saint-Jacques, Perros-Guireo, both of France

Filed Dec. 15, 1969, Ser. No. 884,813
Claims priority, application France, Dec. 16, 1968, 178,469
Int. Cl. G10l 1/00
U.S. Cl. 179—1 SA 4 Claims

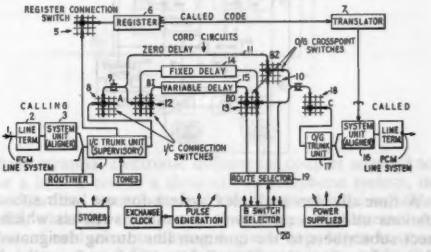


A channel vocoder speech transmission system including at the transmitter station a pitch detector circuit producing pitch marker pulses having a repetition period equal to the fundamental pitch period T of the speech to be transmitted, a pitch marker pulse sorter for eliminating spurious pitch marker pulses whose repetition period differs from said fundamental pitch period by a predetermined percentage of the fundamental pitch period and means for coding into PCM signals the pitch period and, at the receiver station, a speech synthesizer and an excitation signal generator including two shift registers having unequal numbers M and N of stages with $M < N$, two exclusive OR gates respectively associated with the shift registers, with inputs connected to the last and last but one stages of the shift registers and an output connected to the first stage thereof. These shift registers and OR gates form two generators of maximal length linear binary sequences. The shift registers are controlled by shifting pulses having a repetition period equal to $T/(2^M-1)$.

3,622,705
TELECOMMUNICATION SWITCHING SYSTEMS

Winston Theodore Duerdoth, Ruislip; Charles Joseph Hughes, London; John Frederick Hesketh, Greenford; John Roy Jarvis, St. Albans; Martin Reed, Watford; William Desmond Morton, Rickmansworth; William George Tilston Jones, London; Frank Trevor Ball, East Barnet, and Norman Thorogood Thurlow, London, all of England, assignors to Her Majesty's Postmaster General, London, England

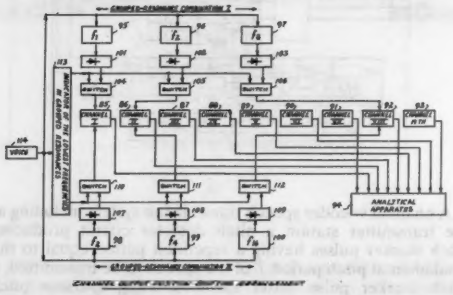
Filed Dec. 10, 1968, Ser. No. 782,541
Claims priority, application Great Britain, Dec. 11, 1967, 56,149/67
Int. Cl. H04j 3/00
U.S. Cl. 179—15 AQ 8 Claims



A time division multiplex communication switching system employing pulse code modulation in which a connection

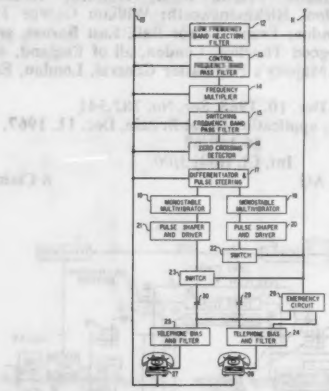
between any two channels is effected by connecting the first channel to all available paths through the system, such paths incorporating time delays of different values including zero, and comparing at the output of the paths the time positions of the first channel and the time position of the second channel and selecting a path having a time position coincident with that of the second channel.

3,622,706
PHONETIC SOUND RECOGNITION APPARATUS FOR ALL VOICES
Meguer Kalfaian, 962 Hyperion Ave., Los Angeles, Calif.
Filed Apr. 29, 1969, Ser. No. 828,067
Int. Cl. G10l *1/00*
U.S. Cl. 179—15 A **10 Claims**



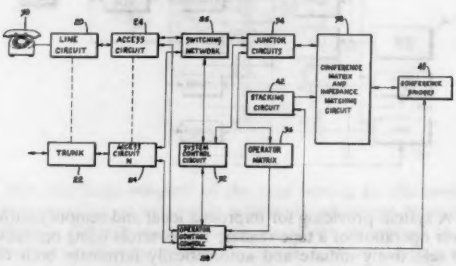
A phonetic sound analyzing system in which groups of resonance peaks which have specific frequency and amplitude ratios are selected from a frequency region above the glottal pitch and vocal cord fundamental frequencies and are representative of phonetic information.

3,622,707
MULTIPLE CHANNEL SUBSCRIBER LOOP
John J. Golembeski, New Providence, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Sept. 3, 1969, Ser. No. 854,873
Int. Cl. H04j *3/00*
U.S. Cl. 179—15 BP **3 Claims**



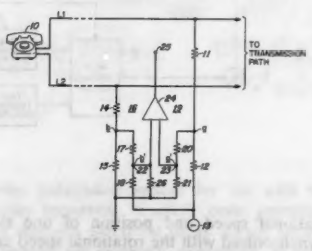
A time division multiplex system for use with subscriber stations utilizes a pilot tone to control switches which connect subscribers to the common line during designated portions of each cycle. The pilot tone taken from the line is changed in frequency before being used to control subscriber connection time to eliminate problems of feedback and crosstalk. Further, each subscriber station set is powered by the subscriber's power during normal operation to further improve crosstalk performance. Service is maintained, however, if any subscriber's power fails by reverting to line power and party line operation for the duration of the power failure. Private line service is automatically returned when subscriber power reappears.

3,622,708
CONFERENCE CIRCUIT
John H. Guenther, Rochester, and Klaus Gueldenpfennig, Penfield, both of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.
Filed May 25, 1970, Ser. No. 40,254
Int. Cl. H04m *3/56*
U.S. Cl. 179—18 BC **14 Claims**



A plurality of junctor circuits having four wire ports are adapted to be connected by a switching matrix to any of a plurality of conference bridges. The switching matrix includes an impedance balance circuit so that the load applied to the conference bridge remains substantially constant regardless of the number of junctor circuits connected to any one conference bridge. Each junctor circuit includes a sidetone suppression circuit for its return signal received from a connected conference bridge. A stacking circuit is also connected to the switching matrix so that the various separate conference connections can be readily interconnected into common conference connections and later disconnected keeping the separate conference connections intact.

3,622,709
SUPERVISORY CIRCUIT FOR TELEPHONE LINES
Garold S. Tjaden, Westmont, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.
Filed Aug. 5, 1969, Ser. No. 847,581
Int. Cl. H04m *3/22*
U.S. Cl. 179—18 F **10 Claims**



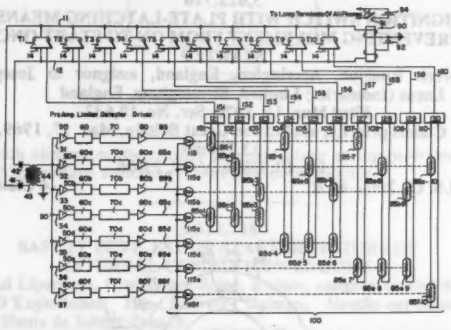
A supervisory detection circuit of monitoring the operative state of communication lines in a telephone system in whidh a pair of voltage dividers are cross-connected across the battery feed resistors, the output of the dividers being applied to the inputs of a differential amplifier. The amplifier is adjusted and the divider resistor vaLues selected so that the amplifier output is low when the voltage difference between the two

divider outputs is of a particular range of magnitudes and polarity and is high when the voltage difference is of the opposite polarity and of a second range of magnitudes.

3,622,710
INTERCOM CONVERTER FOR USE WITH OFFICE TONE-CONTROLLED TELEPHONE SYSTEM

Gordon R. Tothill, Chatham, Ontario, Canada, assignor to Electro Dynamics & Telecon Limited, Chatham, Ontario, Canada

Filed Dec. 20, 1968, Ser. No. 785,640
Int. Cl. H04m *1/50*
U.S. Cl. 179—84 UF **1 Claim**

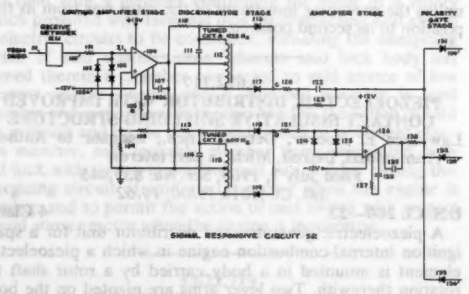


A converter for converting a system of office tone-controlled telephones to enable the use of tone pushbuttons in the placing of inside calls. A series of tone detectors are provided, two of which are responsive to the two frequency components of a tone for lighting lamps in a matrix which act upon photoresistors in coded combinations in the matrix oupout lines, the output lines being coupled to the ringers in the respective telephones in the system. Means are provided for lighting indicator lamps in each of the telephones when an inside call is placed so that the other users of the system will be alerted not to place any inside call until the current call has been completed.

3,622,711
TONE DETECTOR

William H. Blashfield, Galion, Ohio, assignor to North Electric Company, Galion, Ohio

Filed Aug. 25, 1969, Ser. No. 852,676
Int. Cl. H04m *1/50;* **H04q** *9/12*
U.S. Cl. 179—84 VF **13 Claims**

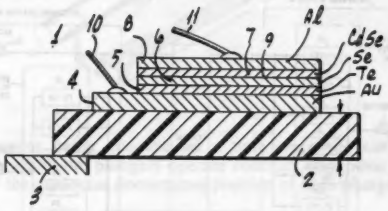


An electronic tone detector circuit for each line in a portable multiline military telephone set which communicates with a switchboard, said tone detector circuit being arranged to detect priority and nonpriority ringing tones and busy tone without responding to speech or random noise. The tone detector circuit includes an incoming limiting amplifier stage which feeds a discriminator stage. The output of the discriminator stage is conducted via a polarity gate stage to three parallel circuits, which provide logic signals over three paths (priority, nonpriority, and busy) to succeeding circuitry in said multiline set to enable said circuitry to effect corresponding visual and audible signals and control of telephonic connections as required.

3,622,712
DEVICE EMPLOYING SELENIUM-SEMICONDUCTOR HETEROJUNCTION

Robert Milton Moore, Skillman, and Charles John Busanovich, Pinceton, both of N.J., assignors to RCA Corporation

Continuation-in-part of application Ser. No. 740,265, June 26, 1968, now abandoned. This application Aug. 29, 1969, Ser. No. 854,163
Int. Cl. H04r *21/04;* **H01l** *3/04, 7/08*
U.S. Cl. 179—100.41K **14 Claims**

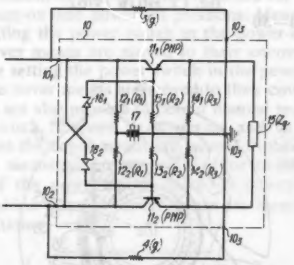


A semiconductor device comprising contiguous layers of crystalline selenium and cadmium selenide with a P-N heterojunction therebetween disposed on a high work function electrode. A thin tellurium film is disposed between the electrode and the selenium layer, and acts as a buffer to provide compatibility between the selenium crystalline structure and the structure of the underlaying electrode.
When employed as a stress-sensitive transducer, the device is disposed on a flexible substrate. The device may also be employed as a thin-film diode.

3,622,713
THREE-TERMINAL ELECTRONIC DIFFERENTIAL COUPLER FOR TELEPHONE CIRCUITS

Henri F. Lassaigne, 13 Residence du Parc de Courcelles, Gif-sur-Yvette, and Serge A. Jeanclaude, 14 Avenue Jean Jaures, Villeneuve-la-Garenne, both of France

Filed May 25, 1970, Ser. No. 39,955
Claims priority, application France, June 5, 1969, 69 18546
Int. Cl. H04b *3/16;* **H04m** *1/60*
U.S. Cl. 179—170 NC **8 Claims**



A three terminal electronic differential coupler adapted to replace a hybrid coil in a three-circuit telephone system, in which a first and a second of said terminals are at a variable potential, while the third terminal is at ground potential. A first one of said circuits having a given impedance is connected between said first and second terminals, while the second and third circuits, each having an impedance substantially equal to one-fourth of said given impedance, are

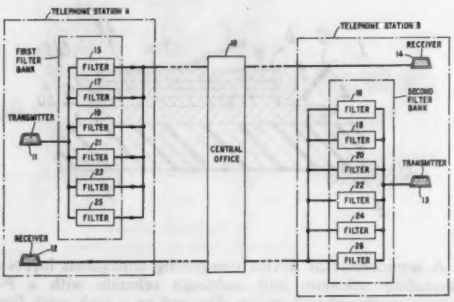
respectively connected between said first and third terminals and said second and third terminals. A ground symmetrical impedance substantially equal to the negative of said given impedance is produced between said first and second terminals by means of a suitable electronic circuit. The arrangement makes its possible to transmit signals from said first circuit to both said second and third circuits, without transmitting signals between said second and third circuits.

3,622,714

TELEPHONIC TRANSMISSION USING COMPLEMENTARY COMB FILTERS

David A. Berkley, Red Bank, and Jeofry S. Courtney-Pratt, Locust, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Sept. 2, 1969, Ser. No. 854,712
Int. Cl. H04m 9/08
U.S. Cl. 179—170.2 **4 Claims**



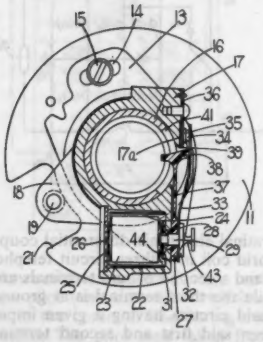
This disclosure describes a system for assuring circuit stability in a telephonic link having substantial acoustic coupling at stations therein, as well as eliminating remote end echo in such circuits. The system uses complementary comb filter banks in which the passband center frequencies are selected to reduce the incidences of harmonic relations among the passband at any one of the filter banks. The system is adapted also to the reduction of electrical circuit echo.

3,622,715

CAM-OPERATED PERIODIC SWITCH ASSEMBLY WITH IMPROVED CAMSHAFT SLEEVE AND INDEPENDENT CAM FOLLOWER

Norman Alfred Jukes, 16 Norman Road, Walsall, Staffordshire, England

Filed Apr. 21, 1970, Ser. No. 30,559
Claims priority, application Great Britain, June 12, 1969, 29,751/69
Int. Cl. H01h 19/62
U.S. Cl. 200—30 **4 Claims**



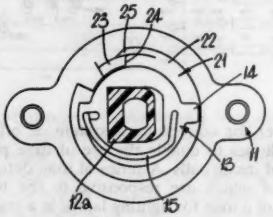
A contact-breaker assembly for use in ignition distributor includes, an annular baseplate arranged to be secured within the casing of an ignition distributor with the camshaft of the distributor extending through the hole in the baseplate and a second plate mounted for pivotal movement on the baseplate, and including a hollow bearing sleeve surrounding the camshaft and spaced therefrom. A body surrounds the bearing sleeve and is journaled for angular movement thereon about the axis of the sleeve, a fixed contact being secured to the body, and a cam follower being engageable with the camshaft, in use, through apertures in the body and the sleeve. A movable contact is resiliently urged into engagement with the fixed contact and is movable out of engagement with the fixed contact by by the cam follower in response to rotation of the camshaft relative to the cam follower.

3,622,716

IGNITION SWITCH WITH PLATE-LATCHING MEANS PREVENTING MOVEMENT FROM ON TO START ONCE STARTED

Derek Rushton, Accrington, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 11, 1970, Ser. No. 18,632
Claims priority, application Great Britain, Mar. 17, 1969, 13,790/69
Int. Cl. H01h 21/50, 27/06
U.S. Cl. 200—42 R **4 Claims**



An ignition switch includes a casing and a rotor mounted for rotation within the casing from a stable first position to a stable second position and from the stable second position to an unstable third position from which it is resiliently urged back to the stable second position. An arcuate cam track is provided on the inner surface of the casing and includes surfaces which extend generally at right angles to the axis of rotation of the rotor. A latch member is rotatable with the rotor and includes a finger which extends radially into engagement with the cam track, a resilient member acting on the latch member urging the finger into engagement with the cam track and being capable of urging the finger radially outwardly when the finger is moved radially inwardly by the cam track during rotation of the rotor. The arrangement for the finger and the cam track is such that the rotor is prevented from movement from its second position to its third position unless the preceding movement of the rotor was from its first position to its second position.

3,622,717

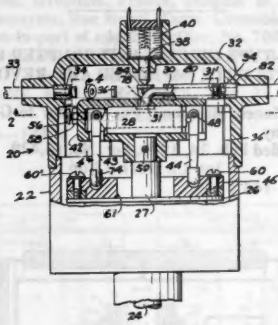
PIEZOELECTRIC DISTRIBUTOR WITH IMPROVED CONTACT INSULATIVE SHIELDING STRUCTURE

Lawrence E. Hoover, Detroit, Mich., assignor to Anthony Tramontozzi, Detroit, Mich., a part interest

Filed July 7, 1969, Ser. No. 839,445
Int. Cl. H01h 19/00, 19/62
U.S. Cl. 200—23 **4 Claims**

A piezoelectric generator and distributor unit for a spark ignition internal-combustion engine in which a piezoelectric element is mounted in a body carried by a rotor shaft for rotation therewith. Two lever arms are pivoted on the body and engage opposed ends of the element. A plate with a cam track is fixed with respect to the rotor and engages the lower ends of the levers so that rotation of the rotor and body causes the levers alternately to compress and release the element which develops a charge at a high potential in response to being stressed by the levers. A central rotor terminal and terminals in a distributor cap provide a conductive path for transmitting charges from the unit. These terminals are sur-

rounded by heat and electrically insulating tubes which extend beyond the ends of the terminals to provide a shield



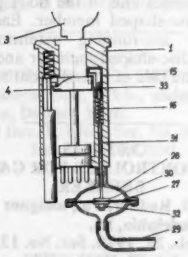
which eliminates the corona and premature arcing problems of high-voltage switching in this type of distributor.

3,622,718

SAFETY DEVICES FOR STARTER MOTORS OF INTERNAL-COMBUSTION ENGINES

Paul Lipschutz, Croissy-sur-Seine, France, assignor to Societe D'Exploitation Des Brevets Neiman, Neuilly-sur-Seine (Hauts de Seine), France

Filed Jan. 29, 1970, Ser. No. 6,716
Claims priority, application France, Jan. 30, 1969, 6901858
Int. Cl. H01h *27/06*
U.S. Cl. 200—44 **7 Claims**



Safety device for preventing the actuation of an electric starter motor of an internal-combustion engine already running and providing a source of low pressure, this device comprising a key-operated safety-lock body, with or without a disc-shaped cam member for controlling an antitheft device and rigid with a member controlling the rotor of a rotary switch provided with terminal pins for connecting said switch to electric circuits to be controlled, including the energizing switch of said starter motor, wherein said lock body has formed therein a chamber connected to said source of low pressure of the engine and a member movable in said chamber and responsive on the one hand to the action of said low pressure and on the other hand to that of a resilient reaction member, said movable member being associated with said lock with a view to prevent said switch from closing the energizing circuit of said starter motor when the engine is running, and to permit the action of said switch with respect to said starter motor when the engine is inoperative.

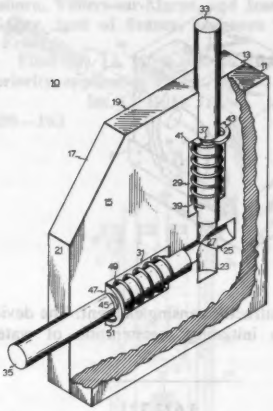
3,622,719

MECHANICAL INTERLOCK

Sherman G. Thomas, Floyd, Va., assignor to General Electric Company

Filed Mar. 27, 1970, Ser. No. 23,364
Int. Cl. H01h *9/20*
U.S. Cl. 200—50 C **4 Claims**

A mechanical interlock for preventing the operation of more than one of a pair of electrical contactors. The interlock includes for operation by each contactor a spring-biased plunger operable within a cylindrical cavity, no more than



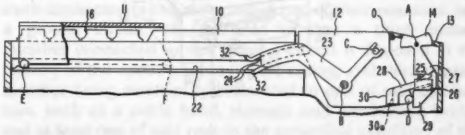
one plunger being operable at a time since the cavities through which the plungers operate obstruct each other just beyond the contactor deenergized position of each plunger.

3,622,720

CALCULATOR KEYBOARD COVER INTERLOCK WITH A DISPLAY COVER AND SWITCH

William A. Allen, Berkeley, Calif., assignor to SCM Corporation, New York, N.Y.

Filed Aug. 19, 1970, Ser. No. 65,111
Int. Cl. H01h *9/22, 3/16*
U.S. Cl. 200—50 A **16 Claims**



An electronic calculator comprising an input keyboad panel, an output display panel, and first and second cover means mounted for movement between positions covering and positions uncovering the panels. The calculator further comprises a calculator power switch mounted for movement between power-on and power-off positions. Means are provided for setting the power switch in the power-on position when the cover means are moved to their uncovering positions, and for setting the power switch in the power-off position when the cover means are moved to their covering positions. Means are also provide to permit manual movement of the power switch between its power-on and its power-off positions when the cover means are located in their uncovering positions. means are further provided for inhibitig manual movement of the power switch from its power-off to its power-on position when the cover means are located in their covering positions.

3,622,721

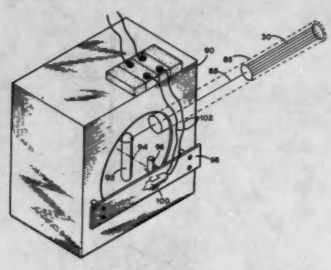
CONTROL DEVICE FOR ACTIVATING A SWITCH

William Hodes, Rahway, and Edward Studley, North Plainfield, both of N.J., assignors to American Standard Inc., New York, N.Y.

Filed Nov. 1, 1965, Ser. No. 505,921
Int. Cl. H01h *36/00;* **Bo1d** *15/04*
U.S. Cl. 200—61.04 **5 Claims**

A control device for activating a switch is disclosed. This device comprises a contractile sensing element sensitive to

the concentration of ions in a body of water. The switch is activated in response to a predetermined change in the

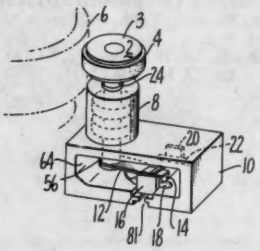


length of the contractile sensing element. The device is especially useful in initiating regeneration of water-softener devices.

3,622,722
STEERING MEMBER REVERSAL SWITCH

Earl L. Jackson, San Francisco, and Werner Sepper, Concord, both of Calif., assignors to Life Technology, Inc., Concord, Calif.

Filed Apr. 20, 1970, Ser. No. 30,198
Int. Cl. H01h *3/16*
U.S. Cl. 200—61.39 **9 Claims**

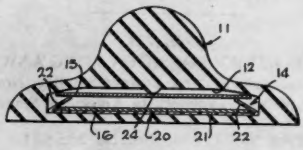


A rim-driven wheel engages a rotatable vehicle steering member. Motion is amplified by a planetary bearing assembly and applied to a lever arm through a clutch assembly. The free end of the arm carries a magnet that actuates magnetically actuated reed switches that are located adjacent to arm stops. Clockwise rotation of the steering member results in closure of one-reed switch; counterclockwise rotation results in closure of the other reed switch.

3,622,723
LINEAR SWITCH

Gustave Fischel, 1064 S. Halt Ave., Los Angeles, Calif.

Filed Jan. 22, 1970, Ser. No. 5,027
Int. Cl. H01h *13/16*
U.S. Cl. 200—86 R **2 Claims**

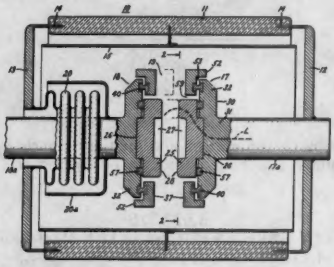


A linear switch having a pair of elongated superposed metal strip conductors enclosed in a resilient nonconductive casing with a nonconductive strip on the outer side of one of the conductors having inturned springy flanges extending between the strip conductors and normally holding the same in spaced relation.

3,622,724
VACUUM-TYPE CIRCUIT INTERRUPTER HAVING CONTACTS WITH IMPROVED ARC-REVOLVING MEANS

Joseph C. Sofianek, Broomall, Pa., assignor to General Electric Company

Filed Feb. 24, 1970, Ser. No. 13,429
Int. Cl. H01h *33/66*
U.S. Cl. 200—144 B **13 Claims**

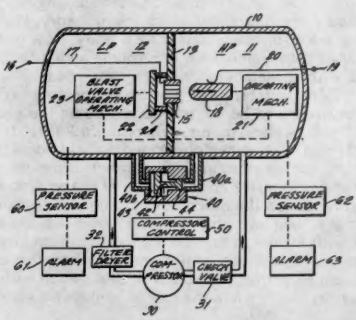


Discloses a vacuum-type circuit interrupter in which the contacts are constructed to revolve any arc located between the contacts. Each contact is a disc-shaped member divided into a plurality of circumferentially spaced segments, each comprising a radially extending body portion and a leg portion at the radially outer end of the body portion extending periphery of the disc-shaped member. Each leg portion is provided with an arc-running extension that extends peripherally of the disc-shaped member and overlaps the adjacent segment on the side of the adjacent segment facing the other contact.

3,622,725
PRESSURE CONTROLLER FOR GAS CIRCUIT BREAKER

Lorne D. McConnell, Radnor, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Feb. 24, 1970, Ser. No. 13,311
Int. Cl. H01h *33/80*
U.S. Cl. 200—148 E **11 Claims**



The pressures of a low-pressure and high-pressure region of a two-pressure gas circuit breaker are applied to pistons carried on a common rod so that the pistons and rod move to a predetermined position when the pressure difference between the two pressure regions is below a given value. The motion of the rod turns on a compressor which operates until a desired pressure ratio is obtained.

3,622,726

GAS BLAST CIRCUIT BREAKER WITH CONTACT CLOSING LOW PRESSURE RESPONSIVE SAFETY DEVICE

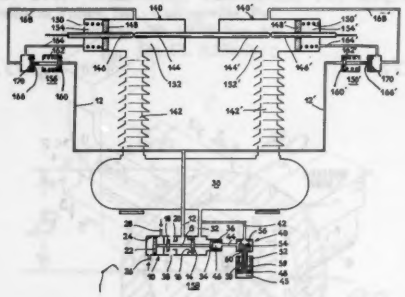
Gerard Billon, Grenoble, France, assignor to Merlin Gerin, Societe Anonyme, Rue Henri, Tarze, Grenoble, France

Continuation-in-part of application Ser. No. 708,661, Feb. 27, 1968, now abandoned. This application Feb. 11, 1970, Ser. No. 10,581

Claims priority, application France, Mar. 23, 1967, 100,127

Int. Cl. H01h *33/54*

U.S. Cl. 200—148 B 6 Claims



A gas blast circuit breaker having a safety device which causes the positive closing of the contacts of the opened circuit breaker according to the normal closing cycle and the locking of the closed contacts when an abnormal pressure drop occurs below the value of the pressure necessary to maintain the contacts in their opened position.

3,622,727

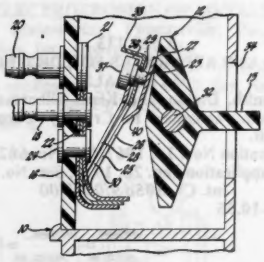
DOUBLE POLE SWITCH

Dale W. Pigeon, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 1, 1969, Ser. No. 881,206

Int. Cl. H01h *3/00*

U.S. Cl. 200—153 1 Claim



The invention relates to double pole contact switches for use on automobile electrically operated systems such as the doors, windows and seats and, more particularly, to double pole contact switches wherein each contact set of the movable contact carrier is made up of a plurality of laminated sheet metal blades, with one blade having a movable contact, and a second blade having an independently movable arcing contact. The arcing contact is arranged and constructed to contact a stationary contact prior to electrical contact being made with the stationary contact by the movable contact. The function of the arcing contact is to extinguish or dissipate any contact arcing that may occur across the movable contact and stationary contact to prevent contact pitting.

3,622,728

HIGH-VOLTAGE CIRCUIT BREAKING DEVICES, NOTABLY FOR A SHIELDED-TYPE PREFABRICATED ELECTRIC STATION

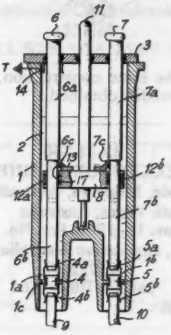
Yves Bokshorn, Villiers-sur-Marne, and Jean-Pierre H. Boudiak, Gagny, both of France, assignors to COQ-France, Pantin, France

Filed Feb. 12, 1970, Ser. No. 10,794

Claims priority, application France, Dec. 9, 1969, 6942447

Int. Cl. H01h *31/24*

U.S. Cl. 200—163 8 Claims



Electric breaker device for high-voltage wiring system, which comprises a casing of electrically insulating material closed by a metal cover, a pair of movable contact rods per phase, adapted to be moved vertically by means of a mechanism, said rods having their upper portions made of electrically insulating material or of an externally insulated conducting material and conducting lower portions, said conducting portions of said rods being interconnected by a conducting bridge, a pair of contact members each connected to a conductor, such as a cable head or bar, and adapted to be each connected to the other rod in one of their positions, and a ground circuit, characterized in that a third contact member connected to said ground circuit is disposed in the vicinity of the upper portion of said casing, said third contact member being electrically connected to one of said conductors, such as a cable head, through said conducting bridge and at least one of said rods in the grounding condition of the device. The actuating mechanism includes two seperate control members, actuation of one control rod raising and lowering both contact rods simultaneously, and actuation of the other control rod raising and lowering only one of the contact rods.

3,622,729

KEY SWITCH DEVICE FOR ELECTRONIC MUSICAL INSTRUMENTS

Junji Ohno, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha Hamamatsu-shi, Shijuoka-ken, Japan

Filed July 23, 1970, Ser. No. 57,447

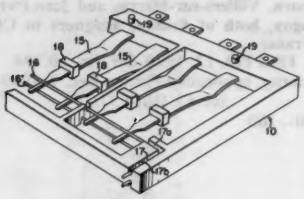
Claims priority, application Japan, July 25, 1969, July 25, 1969, July 25, 1969, July 25, 1969, Aug. 19, 1969, Aug. 19, 1969; 44/70474, 44/70475, 44/70476, 44/70477, 44/78200, 44/78201

Int. Cl. H01h *9/00*

U.S. Cl. 200—166 J 12 Claims

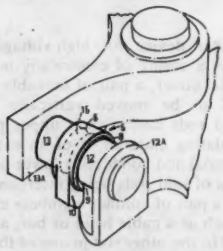
A key switch device for an electronic musical instrument having a frame body made, for example, of plastics material having at least one longitudinal member and a pair of spaced lateral members extending at right angles to the longitudinal member. A plurality of movable contact members fixed to the longitudinal member and arranged in a juxtaposed relationship. At least one elongated fixed contact member fitted at both ends thereof to the lateral members, and extending transversely of the movable contact members. Actuators provided for the respective movable contact members, whereby

the relative position of the movable and fixed contact members can be easily secured. By superposing a plurality of key



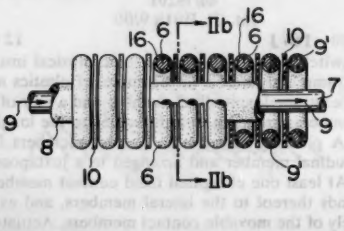
switch devices of the same construction, a multiple contact key switch may be readily obtained.

3,622,730
CONTACT BREAKER POINTS SHIELDING MEANS
William Henry Steele, Milperra, Australia, assignor to Victa Limited, New South Wales, Australia
Filed Nov. 16, 1970, Ser. No. 89,556
Claims priority, application Australia, Nov. 17, 1969, 63922/69
Int. Cl. H01h *9/02*
U.S. Cl. 220—168 H **9 Claims**



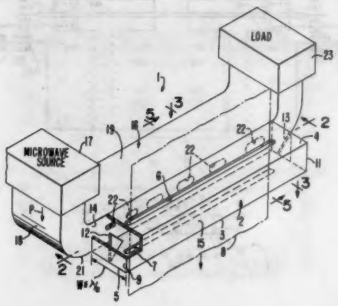
An electrically insulated, resilient cylindrical sleeve gapped on one side to clip over adjacent ends of the contact breaker points of a magneto to enclose the working airgap and exclude fouling particles and matter therefrom. Peripheral enlargements adjacent the gap displacing the center of gravity towards the gapped portion of the sleeve to ensure that this portion remains beneath the points with changes in attitutde of the magneto to permit escape of stray particles and matter.

3,622,731
FLEXIBLE HEAT-GENERATING DEVICE
Masao Ando, Yokohamashi, Japan, assignor to Chisso Corporation, Kitaku, Osaka, Japan
Filed June 11, 1970, Ser. No. 45,282
Claims priority, application Japan, July 4, 1969, 44/52916
Int. Cl. H05b *5/00*
U.S. Cl. 219—10.49 **5 Claims**



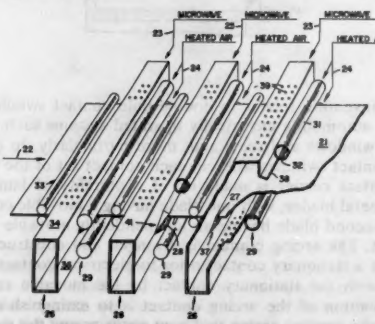
A flexible heat-generating device is constructed by stringing a great number of mutually independent ferromagnetic rings around an insulated conductor line, and heat is generated by the secondary eddy current loss induced upon said rings when an AC current is applied to said conductor line.

3,622,732
MICROWAVE APPLICATOR WITH DISTRIBUTED FEED TO A RESONATOR
Norman H. Williams, San Francisco, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed Jan. 14, 1970, Ser. No. 2,697
Int. Cl. H05p *9/06, 5/00*
U.S. Cl. 219—10.55 **12 Claims**



A microwave applicator is disclosed which employs an elongated hollow resonator dimensioned to be cut off for the dominant waveguide mode at the frequency of the applicator. A hollow waveguide feed extends along and adjacent the resonator and includes a distributed coupling means providing a distributed wave energy feed path from the waveguide to the resonator. The distributed coupling means is arranged for exciting a transverse TEM mode in the resonator to produce standing wave microwave electric fields in the plane of a relatively thin elongated treatment zone within the resonator. The resonator includes a pair of elongated openings in registration with the treatment zone for passage of thin webs of material through the treatment zone. The distributed coupling means is preferably arranged to provide an increasing coefficient of coupling taken in the direction of power flow through the feed waveguide. Thus, the power is distributed to the resonator uniformly.

3,622,733
METHOD AND APPARATUS FOR DRYING SHEET MATERIALS
Franklin J. Smith, Diablo, and Klaus Silbermann, Danville, both of Calif., assignors to Cryodry Corporation, San Ramon, Calif.
Original application Nov. 14, 1967, Ser. No. 682,903. Divided and this application Jan. 28, 1970, Ser. No. 6,499
Int. Cl. H05b *9/06, 5/00*
U.S. Cl. 219—10.55 **7 Claims**



Wood veneers or other flat materials are passed through successive sections of energized meander waveguides and

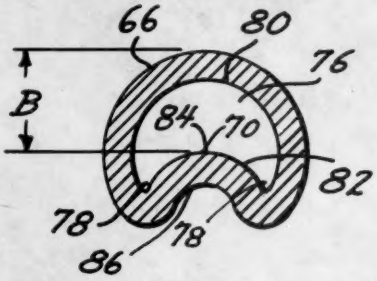
through jets of heated air from air knives situated between the waveguide sections to effect a very rapid drying action in which relatively moist areas are dried more strongly than dryer areas to produce a finished product of uniform moisture content. The waveguide and air knife structure is disposed within an electrical conductor walled, thermally insulated cabinet with continuous feed conveyor means and an air recirculation system in an arrangement which optimizes operating efficiency and convenience.

3,622,734

NONTREPANNING ROTARY ELECTRODE FOR ELECTROEROSION OF METALS

Albert Bruce Mainwaring, Phoenixville, Pa., assignor to Uniform Tubes, Inc., Collegeville, Pa.

Filed Apr. 20, 1970, Ser. No. 29,877
Int. Cl. B23k 9/16
U.S. Cl. 219—69 E 5 Claims



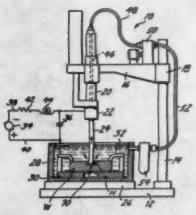
A rotary electrode for electroerosion of metals to form blind or deep through holes in which the dielectric fluid bore or conduit, at least at the operative end of the electrode, is of crescent shape in cross section having cusps extending beyond the central axis of the electrode to prevent the formation of a central plug or core due to trepanning as the electrode is rotated during the electroerosion operation, the bore at its widest cross-sectional area extending up to the central axis of the electrode as a maximum.

3,622,735

NONTREPANNING NONROTARY ELECTRODE FOR ELECTROEROSION OF METALS

Albert Bruce Mainwaring, Phoenixville, Pa., assignor to Uniform Tubes, Inc., Collegeville, Pa.

Continuation-in-part of application Ser. No. 29,876, Apr. 20, 1970. This application July 15, 1970, Ser. No. 55,208
Int. Cl. B23p 1/08
U.S. Cl. 219—69 E 14 Claims



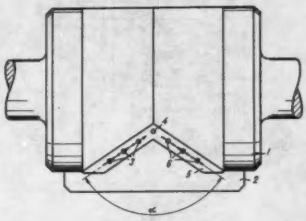
An electrode for forming holes in metal workpieces by electroerosion in which a solid helical member is secured in a substantially cylindrical tubular outer member to provide helical through passages for the dielectric fluid which change and appear to rotate around the central axis of the electrode as the active end of the electrode is consumed so that substantially no buildup of a central plug in the workpiece occurs due to trepanning. The invention also includes electroerosion apparatus and an electroerosion method using the nontrepanning electrode.

3,622,736

ARRANGEMENT FOR DEPOSITING A METALLIC LAYER USING THE ELECTROSLAG METHOD ON THE CIRCUMFERENCE OF HORIZONTAL CYLINDRICAL BODIES

Pavel Blaskovitz, Bratislava, and Jiri Borda, Cesky Tesin, both of Czechoslovakia, assignors to Vyskumny ustav Zvaracsky, Bratislava, Czechoslovakia

Filed Feb. 20, 1970, Ser. No. 12,966
Claims priority, application Czechoslovakia, Feb. 21, 1969, 1232/69
Int. Cl. B23k 9/18, 25/00, 9/12
U.S. Cl. 219—73 2 Claims



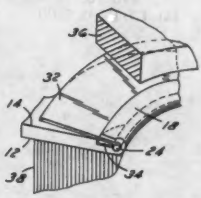
An arrangement for depositing a metallic layer by the electroslag method on the circumference of cylindrical bodies disposed with their longitudinal axis horizontal, particularly of calibrating rolls of rolling machines having a V-shaped profile; in order to prevent cracks of the deposited layer, stable welding electrodes are provided in the apex part of the profile, and mobile electrodes performing an oscillating movement within the welding gap are arranged at both sides of the stable electrode.

3,622,737

FOIL SEAL FOR GAS TURBINE REGENERATOR

John J. Trudeau, deceased, late of Detroit, Mich. (by Margaret L. Trudeau, administratrix, 8237 Bramwell, Detroit, Mich. 48239)

Filed June 1, 1970, Ser. No. 42,363
Int. Cl. F16j 15/32
U.S. Cl. 165—9 2 Claims



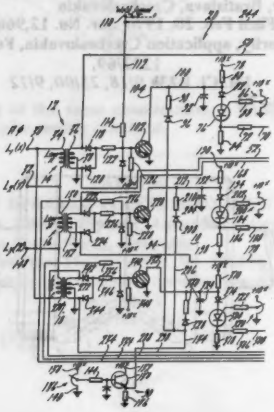
A flexible foil is inserted loosely in a slot formed in the housing side of a shoe-type seal for a rotating regenerator. Tabs attached to each end of the foil bear against the shoe and prevent the foil from sliding longitudinally out of the groove. The slot preferably is formed by folding a projecting ledge of the shoe along one longitudinal edge toward an inclined surface of the shoe. A circular wire can be inserted in the folded joint to produce a slot having a substantially uniform width throughout its entire depth.

3,622,738

MULTIPHASE CONTROL CIRCUIT

George O'Neal, Jr., Detroit, Mich., assignor to Weltronic Company, Southfield, Mich.

Filed Mar. 9, 1970, Ser. No. 17,474
Int. Cl. B23k 11/24
U.S. Cl. 219—114 21 Claims



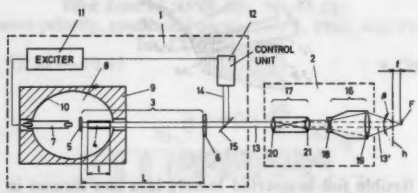
A heat control system for controlling the firing of the control elements, i.e., power-controlled rectifiers, in a welding system utilizing a single-control potentiometer to control the firing angle of each phase in a three-phase power supply system, the circuit including a synchronizing circuit which is adapted to reproduce the weld signal occurring in the first phase for the second and third phases to exactly reproduce the firing angle in the second and third phases irrespective of the relative phase angle of the second and third phases with respect to the first phase.

3,622,739

DEVICE FOR THE PRODUCTION OF A LASER BEAM FOR DRILLING WATCH JEWELS

Jurg Steffen, Zurich, Switzerland, assignor to Institut Fur Angewandte Physik Der Universitat Bern and Pierres Holding S. A., Bern, Switzerland and Biel, Switzerland

Filed Feb. 18, 1970, Ser. No. 12,166
Claims priority, application Switzerland, Feb. 27, 1969, 2968/69
Int. Cl. B23k 9/00
U.S. Cl. 219—121 L 10 Claims



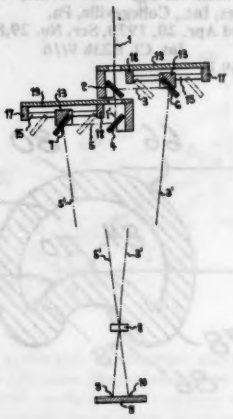
A laser beam is produced for drilling watch jewels by a resonator and a focusing lens system. The resonator comprises a rod of active material mounted between two planer reflectors and energized by a pulse light source, the spacing between the reflectors being at least 10 times greater than the length of the rod.

3,622,740

APPARATUS FOR TREATING WORKPIECES BY LASER ENERGY

Pierre E. Ravussin, Lausanne, and Robert Capua, Prilly, both of Switzerland, assignors to OMEGA Louis Brandt & Frere S.A., Lausanne and ALCYON, Electronique et Physique SA, Renens, Switzerland

Filed Mar. 25, 1970, Ser. No. 22,497
Claims priority, application Switzerland, Apr. 1, 1969, 4950/69
Int. Cl. B23k 9/00
U.S. Cl. 219—121 L 5 Claims



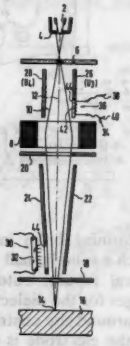
A device for substantially increasing the efficiency, output and quality when treating workpieces by means of laser energy, particularly when welding or boring workpieces, wherein the laser beam from one single laser source is subdivided into a number of individual beams for simultaneously treating a number of places of one or more workpieces.

3,622,741

ELECTRON-BEAM-PROCESSING MACHINE HAVING MEANS FOR DEFLECTING IMPURITIES FROM THE PATH OF THE ELECTRON BEAM

Karl-Heinz Steigerwald, Haderunstr. 1a, Munich, 55, Germany

Filed Aug. 5, 1970, Ser. No. 61,302
Claims priority, application Germany, Aug. 6, 1969, P 19 40 056.7
Int. Cl. B23k 15/00; H01j 37/26
U.S. Cl. 219—121 EB 29 Claims



Apparatus in electron-beam-processing machines for keeping the path of the working beam free of impurities, the ap-

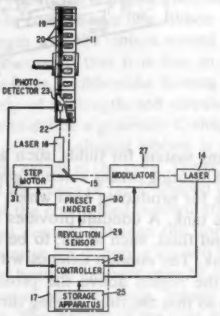
paratus having a screening device associated with the working beam for catching impurities, comprising an ionization device acting in the region of the working beam path, and a deflecting device effective in the region of the said beam path to produce a deflecting field for electrically charged particles, the ionization device being so formed that it acts with an ionization probability greater than that of the working beam on atom-sized or larger particles, the deflecting device exerting a sufficient deflecting action on such electrically charged particles, which move at substantially thermal speeds as to remove these particles from the path of the working beam.

3,622,742

LASER MACHINING METHOD AND APPARATUS

Melvin Irwin Cohen, Berkeley Heights; Walter Werner Weick, Somerville, and John Wesley West, Millington, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 27, 1970, Ser. No. 40,914
Int. Cl. B23k *9/00*
U.S. Cl. 219—121 L **6 Claims**



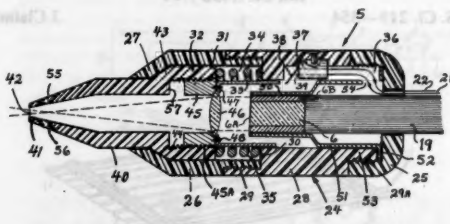
Thin film integrated circuits are formed by coating insulative substrates with conductive film and mounting them on the periphery of a rotating drum. As the drum rotates, a switched laser machines the circuit pattern by vaporizing parts of the metal film of successive substrates. Light from another laser is directed through a mask on the drum circumference and controls modulation of the machining laser.

3,622,743

LASER ERASER AND MICROWELDER

Hrand M. Muncheryan, 1735 Morningside, Orange, Calif.

Filed Apr. 28, 1969, Ser. No. 819,557
Int. Cl. B23k *27/00*
U.S. Cl. 219—121 LA **14 Claims**



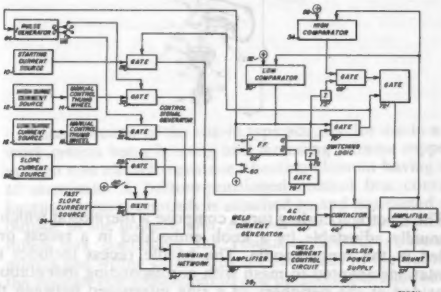
A laser eraser and microwelder capable of operating with a pulsed or continuous-wave laser radiation is described. The device comprises a laser generator, a miniaturized electric power supply unit and a laser working head connected to the power supply unit through a flexible lasing fiber optics accompanied by an electric cable. The lasing fiber optics is optically coupled to said laser generator for generating and transmitting a laser radiation to the laser working head, and the cable conducts the laser triggering current to the laser generator through a triggering switch located in the laser working head. As an eraser, the device utilizes a defocused laser beam to erase an error character by vaporizing it from written matter and can be used either on a desk top or on a typewritter by attaching the power supply unit to the side of the typewriter housing. As a microwelder, the device utilizes a focused laser beam to weld miniaturized parts, components, and circuit leads. Radiation safety is achieved by providing a safety means in the laser working head which must be placed on the workpiece and manipulated before the triggering switch can be actuated to energize said laser generator.

3,622,744

ARC-WELDING SYSTEM

David C. Main, North Stonington; Petros T. Petrides, Norwich; Rodney R. Cordeiro, Stonington, and Charles L. Gordon, East Lyme, all of Conn., assignors to General Dynamics Corporation, New York, N.Y.

Filed Jan. 6, 1969, Ser. No. 789,182
Int. Cl. D23k *9/10*
U.S. Cl. 219—131 R **11 Claims**



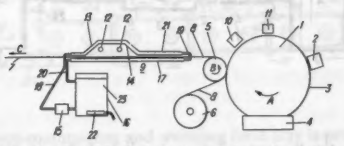
A saturable reactor welding power supply is controlled by a closed loop control system so as to provide arc current which surges periodically between manually selectable predetermined low-current and high-current values. The current is maintained at the high-current value and the low-current value for predetermined times. Switching logic automatically starts the arc at a proper preselected current and automatically decreases the arc current, finally shutting off the supply when a control switch is actuated.

3,622,745

THERMAL BONDING MEANS FOR ELECTROGRAPHIC APPARATUS

Stanley Carden Shepard, Old Harlow, England, assignor to Standard Telephones and Cables Limited, London, England

Filed Nov. 14, 1969, Ser. No. 876,816
Claims priority, application Great Britain, Jan. 16, 1969, 2,558/69
Int. Cl. H05b *1/00*
U.S. Cl. 219—216 **10 Claims**



Thermal bonding means with reduced power requirements for fixing powder particles to a web of paper in electrographic apparatus. The thermal bonding means utilize the direct application of infrared heat to the paper and in addition provide indirect heating by means which utilize the

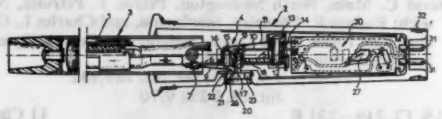
waste heat from the infrared application. The indirect means absorb the waste heat initially and reapply it so as to heat the paper and powder particles before and during the direct application of infrared heat.

3,622,746

ELECTRICAL CURLING IRONS

Maurice Marie Achille Trouilhet, Lyon, France, assignor to Calor, Lyon, France

Filed Mar. 19, 1970, Ser. No. 20,933
Claims priority, application France, July 30, 1969, 6926075
Int. Cl. A45d *1/04, 1/28;* H05b *1/02*
U.S. Cl. 219—225 2 Claims



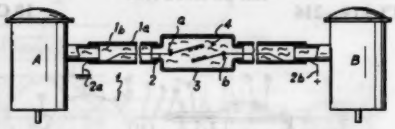
The electrical curling tongs comprise a thermostat which is manually adjustable by a knob embedded in a recess provided in the tongs handle. The handle recess includes indentations adapted to mesh with corresponding indentations provided at the periphery of a ring interposed between the knob and the recess for presetting the temperature range of the tongs. The ring includes internal stops and the knob also comprises stop means so that, upon rotating the knob within the ring, the rotary motion of the knob controlling the heating temperature is limited.

3,622,747

HYDRAULIC TRANSMISSION SYSTEMS

Pierre Cibie, Paris, France, assignor to Projecteurs Cibie, Bobigny, France

Filed July 9, 1969, Ser. No. 840,334
Claims priority, application France, July 22, 1968, 160,050
Int. Cl. F24h *1/10*
U.S. Cl. 219—307 3 Claims



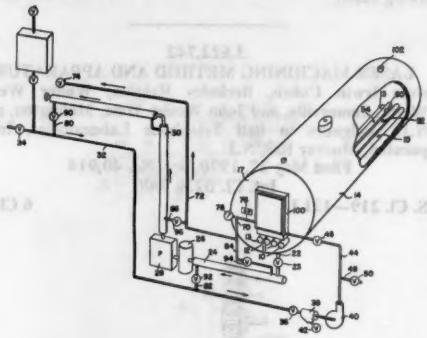
A hydraulic transmission circuit includes an electric-heating circuit within it. The heating circuit includes a heating wire and a temperature-responsive switch for opening and closing the heating circuit in response to the temperature of the hydraulic liquid. The switch may comprise bimetallic strips having magnets which attract each other at the ends of the strips carrying the switch contacts.

3,622,748

ELECTRIC HEATING SYSTEM FOR ASPHALT EQUIPMENT

William W. Sellers, c/o The Sellers Company, Inc., 396 E. Church Road, King of Prussia, Pa.

Filed Apr. 1, 1966, Ser. No. 539,348
Int. Cl. H05b *3/82;* F24h *1/00*
U.S. Cl. 219—326 10 Claims



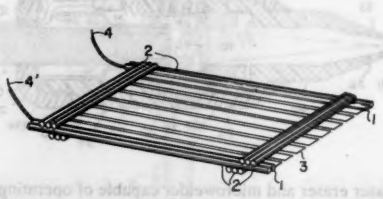
A tank-heating system for fluids, such as asphalt, in which an electric tank-heating means extends generally horizontally within the tank for producing heat which is absorbed by the contents of the tank. A conduit provides a flow path for the flow of a second fluid, such as oil, to be heated by the contents of the tank. The conduit extends within the tank and is positioned in the region above the proximate to the tank-heating means so that the fluid passing through the conduit is in effective heat exchange relationship to the tank-heating means and the contents of the tank in the region. A second electric heating means is associated with the conduit for applying heat directly to the fluid flowing through the conduit. The tank-heating means, the conduit and the second heating means are structurally interconnected so as to form a unitary assembly for installation within the tank as a single unit.

3,622,749

CONDUCTION HEATER

Shigeo Kuwayama, and Syozo Takeuchi, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-Kamigun, Kanagawa, Japan

Filed Feb. 18, 1970, Ser. No. 12,312
Claims priority, application Japan, Feb. 26, 1969, 17116
Int. Cl. H05b *1/00*
U.S. Cl. 219—354 3 Claims



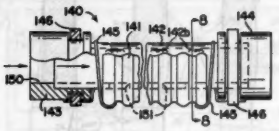
A heater consists of a number of glass tubes arranged in parallel and in contact with one another. Some of the glass tubes have a metallic rod or tube therein and are interposed among other glass tubes carrying a heating strip therein.

3,622,750

HEATING ELEMENT AND PACKAGING MACHINE EQUIPPED THEREWITH

Ridley Watts, Jr., Cleveland, Ohio, assignor to The American Packaging Corporation

Filed May 3, 1968, Ser. No. 726,513
Int. Cl. H05b 3/10; B65b 31/00; F24h 3/04
U.S. Cl. 219—377 18 Claims



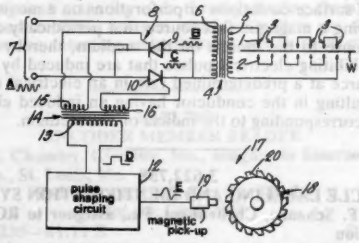
A skin-packaging machine has a plurality of heaters which are connected in series during product loading portions of a cycle and are connected in series-parallel for the heating part of the cycle. The heaters each includes a tubular quartz core which support a Nichrome resistance heating element. In one form, the element comprises a thin ribbon corrugated transversely of its length with the ribbon wound in loose convolutions around the core so that it is free to expand and contract. In another form, a ribbonlike heating element is corrugated transversely of its length and circularly bent about a longitudinal axis to define a generally C-shaped cross section. The open side of the C-shaped ribbon is of smaller extent that the diametric extent of the core. The core extends within the element and the edges of the C-shaped ribbon engage the core. Because of the corrugated configuration of the heating element, physical contact between the core and element is minimized. Apparatus for directing air into heat-transfer relationship with the heating element may be provided. The air-directing apparatus may include means for passing air through the core. The interior of the core may have a radiant heat-absorbing coating to aid in heating the air passing therethrough. Alternatively, a reflector may be provided within the core to reflect incident radiation back to the heating element.

3,622,751

METHOD AND APPARATUS FOR ELECTRICALLY PERFORATING SHEET OR WEB MATERIAL

Rene Larive, and Richard L. C. Knight, both of Grand'Mere, Quebec, Canada, assignors to Consolidated Paper (Bahamas) Limited, Nassau, Bahamas

Filed June 12, 1969, Ser. No. 832,592
Int. Cl. H05b 7/18
U.S. Cl. 219—384 13 Claims



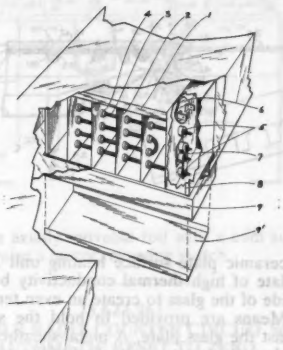
A method and apparatus for perforating a web or sheet of material by passing a plurality of sparks through the web, with the first spark forming the perforation and the remaining sparks enlarging the perforation, and controlling the number of sparks to control the size of the perforation.

3,622,752

ELECTRICAL HEATING APPARATUS WITH A SIDE-POSITIONED IN-DUCT TERMINAL BOX AND A BOTTOM-POSITIONED CONTROL BOX

Jerome F. Brasch, c/o Sidney B. King P.O. Box 6825, Brentwood, Mo.

Filed Nov. 24, 1969, Ser. No. 879,309
Int. Cl. F24h 3/04; H05b 3/06
U.S. Cl. 219—375 2 Claims



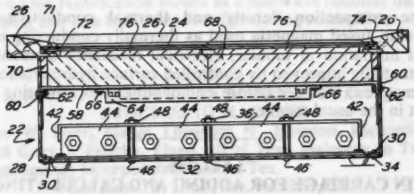
A space heater of the slip-in type adapted for use in a ductwork system has a housing unit including a frame supporting at least one electric-resistance-heating element having a pair of terminals. A bottom-positioned control box containing heating element controls is attached to and positioned at the outside of the housing unit. An enclosed side-positioned, terminal box containing the resistance-heating element terminals and wiring connecting the terminals to the controls in the control box is attached to and positioned within the housing unit substantially at right angles to the control box. The housing unit, the control box and the terminal box are so dimensioned relative to the ductwork system that when the space heater is installed within the ductwork, both the housing unit and the terminal box are recessed within the ductwork while the control box is positioned outside and at the bottom thereof. The terminal box contains thermal cutouts operatively connected to the heating element.

3,622,753

PORTABLE HEAT-MAINTAINING AND WARMING FOOD TRAY

Ruth F. Lax, 164 E. 81st St., New York, N.Y., and Frank Kahn, Abington, Pa., assignor to said Lax, by said Kahn

Filed Aug. 14, 1970, Ser. No. 63,793
Int. Cl. H05b 3/68
U.S. Cl. 219—452 11 Claims



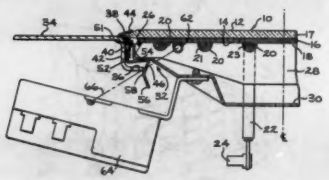
A heat-maintaining and warming food tray is provided having a self-contained power source. The device includes a heatable plate to the underside of which a plurality of strips of heating tape are secured. The power source comprises rechargeable batteries which are connected to the heating tape via switching means. The switching means disconnect the strips from the power source when the output voltage of the battery falls below a predetermined voltage.

3,622,754

GLASS PLATE SURFACE HEATING UNIT WITH EVEN TEMPERATURE DISTRIBUTION

Bohdan Hurko, Louisville, Ky., assignor to General Electric Company

Filed July 24, 1970, Ser. No. 58,110
Int. Cl. H05b 3/68
U.S. Cl. 219—462 10 Claims



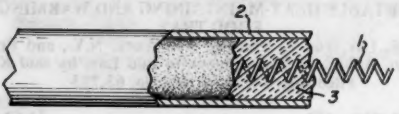
A glass-ceramic plate surface heating unit having a heat spreader plate of high thermal conductivity bearing against the underside of the glass to create an even temperature distribution. Means are provided to hold the spreader plate firmly against the glass plate. A metal-sheathed heating element of high watts density is attached to the underside of the heat spreader plate. Reinforcing means are present beneath the spreader plate to prevent warpage. A temperature-limiting means is combined with the heat spreader plate to limit the maximum temperature to which the glass ceramic plate is exposed. The heat spreader plate is grounded to provide a safety precaution since the glass ceramic plate becomes more electrically conductive at higher temperatures.

3,622,755

TUBULAR HEATING ELEMENTS AND MAGNESIA INSULATION THEREFOR AND METHOD OF PRODUCTION

Willem Vedder, Latham, N.Y., assignor to General Electric Company

Filed Mar. 21, 1969, Ser. No. 809,149
Int. Cl. H01c 1/02; H05b 3/10, 3/44
U.S. Cl. 219—544 8 Claims



The compaction density and thermal conductivity of granular, fused magnesia used as thermally conducting electrical insulation in tubular, electrical resistance elements is substantially improved by controlled surface hydroxylation of the magnesia powder before compacting it in a heating element in the usual manner.

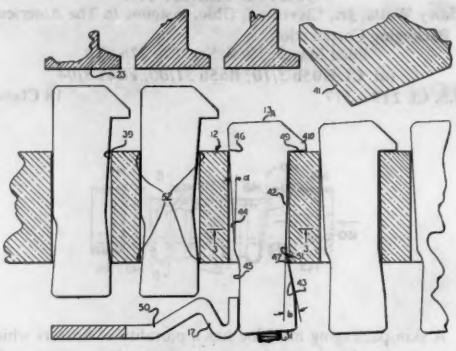
3,622,756

PIN CARRIAGE FOR ADDING AND CALCULATING MACHINES

Richard E. Busch, La Puente, Calif., assignor to Addmaster Corporation, San Gabriel, Calif.

Filed Feb. 9, 1970, Ser. No. 9,656
Int. Cl. G06c 29/00
U.S. Cl. 235—60 R 5 Claims

A pin carriage for adding and calculating machines embodying settable escapement pins for stepping the carriage, the pins each having a camming edge which cams the carriage in a retrograde direction upon movement of the pin from a carriage-arresting position, in engagement with an arresting element, to a nonarresting position. This produces a detenting action of the pin which is in arresting location without requiring the usual individual pin detents.

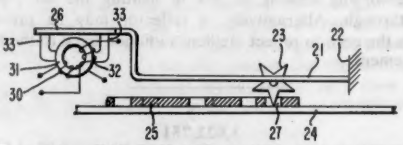


3,622,757

APPARATUS FOR ELECTRICALLY RESPONDING TO SURFACE DEVIATIONS ON A MOVING MEDIUM

Paul R. Hoffman, Farmington, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Sept. 25, 1969, Ser. No. 860,964
Int. Cl. G06k 7/08
U.S. Cl. 235—61.11 D 5 Claims



An apparatus for electrically responding to indicia in the form of surface deviations or perforations on a moving medium having a magnetic flux source that periodically activates in response to the indicia on the medium, thereby periodically inhibiting electrical pulses that are induced by another flux source at a predetermined rate in an electrical conductor, resulting in the conductor having an induced electrical output corresponding to the indicia on the medium.

3,622,758

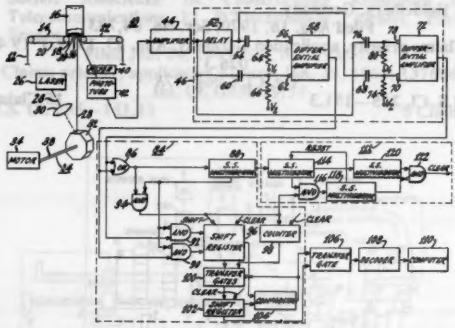
ARTICLE LABELING AND IDENTIFICATION SYSTEM

Joseph F. Schanne, Cheltenham, Pa., assignor to RCA Corporation

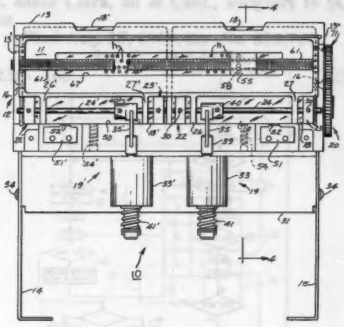
Continuation of application Ser. No. 740,624, June 27, 1968, now abandoned. This application Nov. 9, 1970, Ser. No. 88,075
Int. Cl. G06k 5/00
U.S. Cl. 235—61.11 E 13 Claims

Binary coded designator labels are affixed to articles to identify them. The articles are optically scanned to detect the binary codes on the labels and the binary codes are decoded

to provide automatic reading and recognition of the articles. Circuits are included for discriminating against signals produced in response to dirt or defects in the optically scanned surface.



information corresponding to the code. The screws are driven by motor-driven gears, and the direction of rotation is reversed by an axially movable rod with a cam surface that positively operates a motor reversing switch.

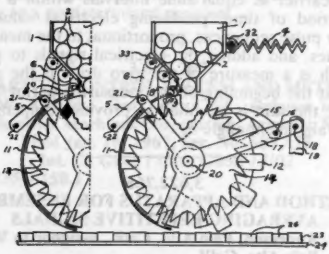


3,622,759

PELLET CODE SETUP, TRANSFER AND DECODING DEVICE

Edward James Fitzell, Birkenfeld, Oreg.

Filed June 30, 1969, Ser. No. 838,374
Int. Cl. G06k *7/04*
U.S. Cl. 235—61.11 B **7 Claims**



A pellet setup and transfer device. A cylinder is mounted for rotation about its longitudinal axis and has a plurality of pellet-receiving recesses in its surface. A pellet supply provides pellets to the recesses as desired. As the cylinder rotates, the pellets are rotated to a discharge point, being retained on the cylinder during rotation by a cover. The pellets are discharged into holes in an endless belt. Rods pass through the endless belt holes, and with respect to those holes in which pellets are situated the rods cause the pellets to push against actuating rods thereby moving them, while with respect to those holes in which no pellets are situated rods enter the actuating rods, thereby leaving them stationary.

3,622,760

ENCODER MEMBER READER

Calvin L. Chumley, Glendale, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Dec. 11, 1969, Ser. No. 884,266
Int. Cl. G06K *7/00*
U.S. Cl. 235—61.11 E **8 Claims**

A device for reading an encoded card is disclosed which includes a chamber for receiving a card encoded by a predetermined pattern of holes, a radiant energy source including a plurality of light source elements, and a radiant energy detector including a plurality of light-sensitive elements, both of which are synchronously moved by screws across opposite sides of the card to effect scanning and produce signals responsive to the particular code and provide

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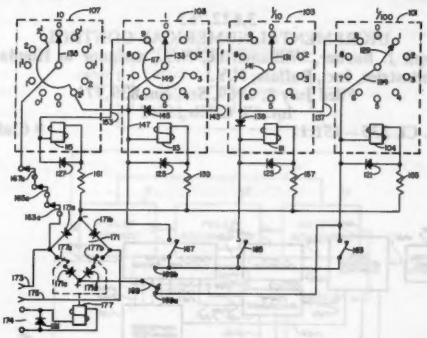
3,622,761

VARIABLE RADIX COUNTER CIRCUIT WITH AUTOMATIC RESET TO ZERO

John A. Haase, Bloomington, Minn., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Jan. 7, 1970, Ser. No. 1,112
Int. Cl. H03k *21/36, 21/02*
U.S. Cl. 235—92 PE **6 Claims**



A mixed radix counting device which provides automatic restoration to the zero state of the counting device upon reaching a predetermined maximum count. The counting device uses rectification means as a full-wave rectifier during counting and as a half-wave rectifier during restoration.

3,622,762

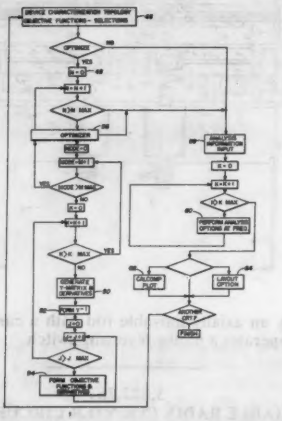
CIRCUIT DESIGN BY AN AUTOMATED DATA PROCESSING MACHINE

Lester W. Dyer, Plano; Theodore W. Houston, Richardson, and Gary J. Policky, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed June 11, 1969, Ser. No. 833,892
Int. Cl. G06f *15/56*
U.S. Cl. 235—150 **31 Claims**

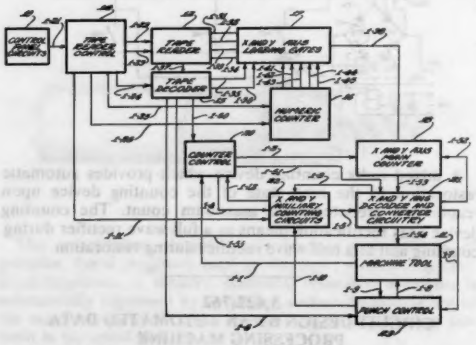
Using representations of circuit topologies and initial values of all elements, a circuit design may be modified by an automated data processing machine to improve operation for at least one performance characteristic by changing design variables. A desired circuit topology is selected and the initial values for all the circuit elements are coded and stored in the data processor. In addition, the desired performance characteristic is also selected and coded. Using coded input infor-

mation, the data processor generates and stores a representation of a continuous analytical objective function. In the operation of the data processor, a value of the objective function is generated and stored. This value is dependent



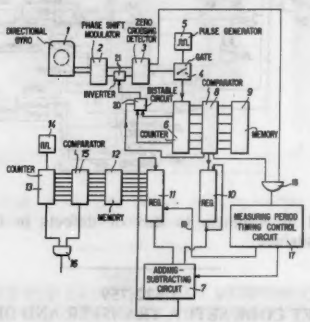
upon the sum of a power function of the difference between an actual performance and a specified performance characteristic. To obtain a specified performance characteristic for a given circuit topology, the value of the objective function is improved.

3,622,763
INCREMENTAL NUMERICAL CONTROL
Joseph J. Barber, Williamsville, N.Y., assignor to Houdaille Industries, Inc., Buffalo, N.Y.
Filed July 8, 1969, Ser. No. 839,971
Int. Cl. G05b *19/42*
U.S. Cl. 235—151.11 **9 Claims**



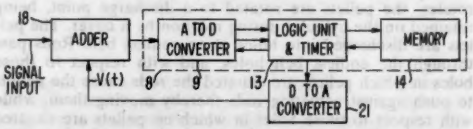
A numerical control system having a main counter for registering successive displacement commands and for counting down to zero as the load reaches the commanded end position wherein an auxiliary counter maintains the load at such end position during reading of a new command into the main counter. A zero crossing network for controlling the drive circuits and the main counter can accommodate unlimited overshoot and oscillation of the load relative to the end point. Position decoding logic directly energizes the summing input of an operational amplifier with the analog signals controlling slowdown and positioning.

3,622,764
METHOD OF DETERMINING THE DRIFT OF A GYROCOMPASS
Horst Brendes, Walldorf; Waltraud Bar, Bruchsal, and Egon Funk, Nussloch, all of Germany, assignors to Teldix GmbH, Heidelberg, Germany
Filed Aug. 18, 1970, Ser. No. 64,783
Claims priority, application Germany, Aug. 23, 1969, P 19 43 026.3
Int. Cl. G06g *7/78*
U.S. Cl. 235—151.3 **15 Claims**



The drift of a directional gyro with a stationary gyro carrier is determined by making a plurality N of measurements of the alignment angle α of the gimbal bearing the gyro rotor with respect to a reference axis determined by the position of the gyro carrier at equal time intervals within a predetermined period of time, producing electrical value signals, preferably pulse sequences, proportional to the measured angular values, and adding the electrical signals to provide a sum which is a measure of the gyro drift. If the alignment angle α_0 at the beginning of the measuring periot T is other than zero, the sum is modified to provide compensation for the initial alignment angle α_0.

3,622,765
METHOD AND APPARATUS FOR ENSEMBLE AVERAGING REPETITIVE SIGNALS
Weston A. Anderson, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.
Filed June 27, 1969, Ser. No. 837,021
Int. Cl. G06f *7/38*; G06j *1/00*
U.S. Cl. 235—151.3 **10 Claims**



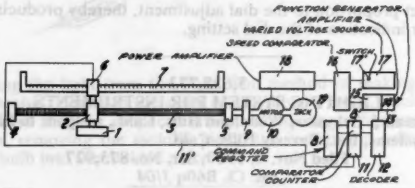
A spectrometer or similar device is scanned repetitively to produce a series of repetitive output signals either of analog or digital form. Each output signal includes an ensemble of time-displaced components and is identical to the other output signals except for noise. The series of output signals is ensemble averaged (time averaged) by an ensambled-averaging digital computer which scans each output signal of the series and samples each output signal at a plurality of sampling points at the same relative position in each output ensemble. Digital data for each sampling point is accumulated in a separate channel of the memory to improve the signal-to-noise ratio. An extra bit is added into the sampled data for each sampling point, such added bit being less than the least significant bit to be stored in the memory. The accumulation of added bits of each sampling point, over a series of scans, adds to zero to some number which is the same for each sampling point, whereby the digitization error is reduced.

3,622,766

DEVICE FOR ACCURATE POSITIONING OF MOVABLE MEMBERS ON A MACHINE TOOL

Robert David, Paris, France, assignor to Societe Anonyme Societe Alsacienne De Constructions Atomiques De Telecommunications Et D'Electronique, Alcatel, Paris, France

Filed Jan. 24, 1969, Ser. No. 793,710
Claims priority, application France, Jan. 25, 1968, 137686
Int. Cl. G05b 19/38
U.S. Cl. 235—151.11 8 Claims



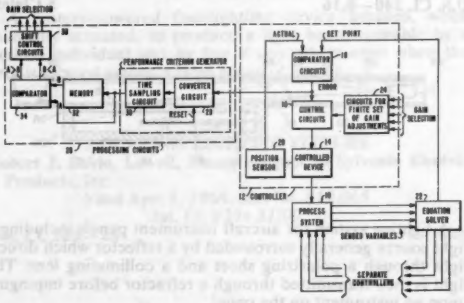
The invention relates to a device for accurate positioning of movable members. To that effect, the member is driven into a position with accurate coordinates, the path of the member, being compounded in several elements whereby the first of them can be run at a maximum speed and the following at lower and lower speeds, so that when the displacement stops, the member occupies the accurate coordinates, and the quick and accurate positioning of the member is actuated according to a predetermined program.

3,622,767

ADAPTIVE CONTROL SYSTEM AND METHOD

Richard W. Koepcke, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 16, 1967, Ser. No. 609,415
Int. Cl. G06f 15/46; G05b 13/02
U.S. Cl. 235—150.1 8 Claims



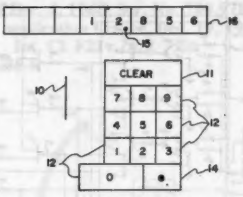
A control system of the adaptive type in which the applicable control law is chosen from a finite set of possibilities, with changes between the control laws being effected dependent upon the relative changes in system performance, without relation to external performance standards. As performance varies, comparisons between successive values for the chosen criteria are continually made and the system shifts between individual control laws within the available set of control laws to tend toward optimum performance for the conditions under which the system is then operating.

3,622,768

DUAL KEY DEPRESSION FOR DECIMAL POSITION SELECTION

John C. Clark, Oakland; Han Kuijsten, Oakland, and Werner Schaer, Santa Clara, all of Calif., assignors to SCM Corporation

Filed Aug. 28, 1969, Ser. No. 853,738
Int. Cl. G06f 13/00
U.S. Cl. 235—160 27 Claims



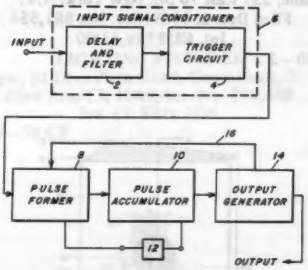
Depression of a register clear key concurrently with depression of a digit key for purposes of selection of the decimal point position in a calculating machine without decimal point selection dials, levers, etc. is disclosed.

3,622,769

ANALOG-TYPE RESISTANCE PROGRAMMABLE COUNTER

Peter A. Lajoie, Chelmsford, Mass., and Jack W. Skinner, New Kensington, Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Oct. 1, 1969, Ser. No. 862,717
Int. Cl. G06g 7/06, 7/18
U.S. Cl. 235—183 9 Claims



An electric analog counter which in its basic assembly includes a pulse former, a pluse accumulator and an output generator wherein the pulse accumulator includes an external variable program resistor whose value is preselected to control the rate of accumulation of an electric charge in said accumulator thereby varying the number of pulses, or counts, necessary for the pulse accumulator to trigger the output generator which signals the completion of the counting event. In a preferred embodiment a delay and filter section and a trigger section are incorporated within a input signal conditioner which preconditions the inputs to cause the counter respond only to input signal counts and not to extraneous noise signals.

3,622,770

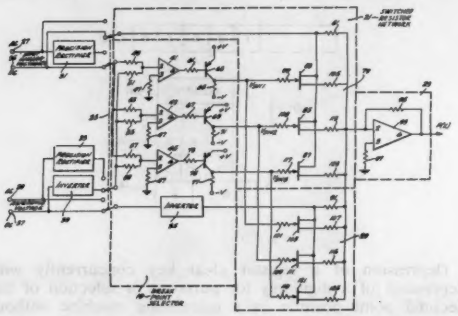
STRAIGHT LINE SEGMENT FUNCTION GENERATOR

Roger H. Edelson, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 21, 1968, Ser. No. 754,442
Int. Cl. G06g 7/26
U.S. Cl. 235—197 13 Claims

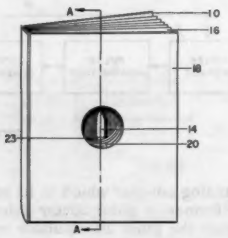
A system for converting a variable AC or DC input analog voltage into an output voltage which approximates a desired mathematical AC function of the analog voltage with straight

line segments. In response to a change in the amplitude of the analog voltage, the output levels of a plurality of switch control circuits are selectively changed between first and second voltage levels to enable a switched resistor network to selectively switch a plurality of associated resistance



branches in or out of an amplifier circuit, and thereby vary the gain of the amplifier circuit to produce an output, composed of straight line segments, which varies approximately in accordance with the desired AC function of the input analog voltage.

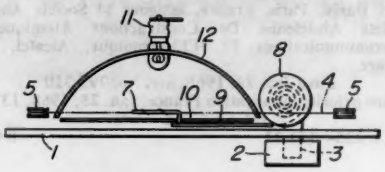
3,622,771
ILLUMINATED BOOK
Charles Franc, 221 East 70 St., New York, N.Y.
Filed Dec. 2, 1969, Ser. No. 881,554
Int. Cl. F21v *33/00*
U.S. Cl. 240—2 **3 Claims**



A book has a rear page or cover with an exposed battery-powered lamp. All of the other pages have aligned cutout regions exposing the lamp.

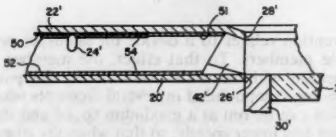
3,622,772
DIAL DEVICE
Kazuhiro Koiso, Osaka; Tadato Ozima, Hirakata-shi; Hanji Takahashi, Suita-shi; Soji Takada, Hirakata-shi; Akira Asai, Hirakata-shi, and Toru Kokuwa, Neyagawa-shi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 2, 1968, Ser. No. 780,453
Claims priority, application Japan, Dec. 8, 1967, 43/103873
Int. Cl. G01d *13/06, 11/28*
U.S. Cl. 240—2.1 **7 Claims**

A dial device for radio receivers and other communication apparatus, which is simplified in construction, employing a band indicator plate which eclipses a display window in



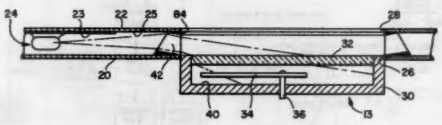
direct proportion to the dial adjustment, thereby producing a clear indication of the dial setting.

3,622,773
LIGHTING SYSTEM FOR INSTRUMENTS
Norman J. Schuster, Woodland Hills, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed Nov. 4, 1969, Ser. No. 873,927
Int. Cl. B60q *3/04*
U.S. Cl. 240—8.16 **6 Claims**



A lighting system being useful for aircraft instrument panels is disclosed. The system includes a light source located between two surfaces which are coated with a flocking material to prevent light reflection from the surfaces. The light is transmitted through a refractor before impinging upon an instrument.

3,622,774
LIGHT SYSTEM FOR INSTRUMENTS
Norman J. Schuster, Woodland Hills, Calif.; Donald L. Ort, Brookside, N.J., and Gus D. Sams, San Gabriel, Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Nov. 4, 1969, Ser. No. 873,928
Int. Cl. B60q *3/04*
U.S. Cl. 240—8.16 **5 Claims**

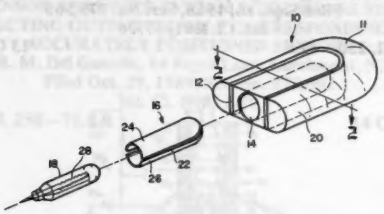


A lighting system for aircraft instrument panels including a light source generally surrounded by a reflector which directs light through a polarizing sheet and a collimating lens. The light is then transmitted through a refractor before impinging upon an instrument on the panel.

3,622,775
APPARATUS FOR DIRECTING AND POLARIZING LIGHT AND METHOD OF MAKING SAME
Donald L. Ort, Brookside, N.J., and Kenneth R. Carter, Woodland Hills, Calif., assignors to Litton Systems, Inc., Beverly Hills, Calif.
Filed Nov. 4, 1969, Ser. No. 873,891
Int. Cl. F21
U.S. Cl. 240—9.5 **8 Claims**

An apparatus for directing and polarizing light comprising a unitary molded clear plastic support having an opening for

a light bulb and a reflector placed about the bulb and having a sheet of polarizing material positioned about the opening in the plastic support so as to polarize the light from the bulb. A lens is formed in the periphery of the plastic support for collimating the light from the bulb. The method of making the apparatus comprises the steps of providing a mold, placing a polaroid sheet in proper position, introducing a hardenable resin, removing the molded piece and inserting a reflector and bulb into the molded piece.



3,622,776
AUCTION LIGHT

Guy Loyd Wyrick, Box 108, Chester, Okla.

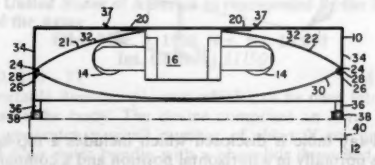
Filed Aug. 17, 1970, Ser. No. 64,245
Int. Cl. F21l 7/00
U.S. Cl. 240—10.6 4 Claims

A battery-powered flashlightlike device adapted, when manually actuated, to produce a light beam viewable by a desired individual and by few if any others even when the user is located among a large group of people.

3,622,777
AQUARIUM LIGHTING FIXTURE

Robert J. Bovio, Lowell, Mass., assignor to Sylvania Electric Products, Inc.

Filed Apr. 1, 1969, Ser. No. 812,065
Int. Cl. F21v 31/00
U.S. Cl. 240—26 1 Claim

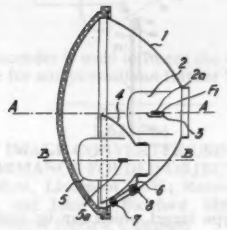


An aquarium lighting fixture incorporated into a cover that is positioned above the tank portion of the aquarium. The cover fixture includes a lamp and reflector which are protected by a snapin acrylic shield from spray caused by the water cycling apparatus of the tank. The cover fixture is spaced from the metal frame of the tank by insulator pads that also provide protection from accidental electrical shock.

3,622,778
VEHICLE HEADLAMP WITH TWO LIGHT SOURCES

Pierre Cibie, Paris, France, assignor to Projecteurs Cibie, Bobigny, France

Filed Dec. 4, 1968, Ser. No. 780,978
Claims priority, application France, Dec. 19, 1967, 132,870
Int. Cl. F21v 7/00, 7/06
U.S. Cl. 240—41.35 R 2 Claims

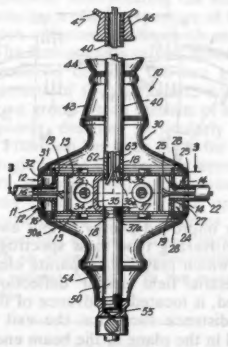


A main parabolic reflector has an iodine lamp located slightly in front of the reflector focal point. A masking element below the lamp defines a plane below which no light from the lamp strikes the reflector. An auxiliary reflector having an aperture substantially one half that of the main reflector has a second iodine lamp at its focal point. The vertical axis of the auxiliary reflector is spaced from the vertical axis of the main reflector, and the aperture of the auxiliary reflector is tangent to the plane defined by the mask.

3,622,779
LIGHTING FIXTURES

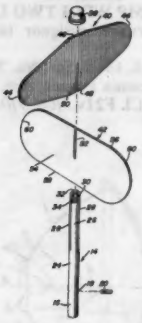
Herbert Lagin, 31 Deer Park Road, Great Neck, N.Y.

Filed Jan. 13, 1969, Ser. No. 790,688
Int. Cl. F21s 1/06
U.S. Cl. 240—78 CF 12 Claims



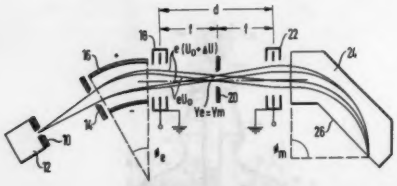
This lighting fixture is a knockdown construction which can be finally assembled in situ. Parts are preassembled. The lamp carrying arms can be shipped wired, prior to assembly with the junction casing and are easily assembled with the junction casing in such way that the arms are locked and cannot move out of fixed position. The locking device consists of adapters fixed on the end portions of the arms. Tabs on the adapters fit into slots in the casing to lock the adapters against rotation.

3,622,780
RAILWAY SWITCH TARGET
Willie R. McCain, P.O. Box 456, Fort Pierce, Fla.
Filed Jan. 15, 1970, Ser. No. 3,027
Int. Cl. B61l 5/14
U.S. Cl. 246—476 3 Claims



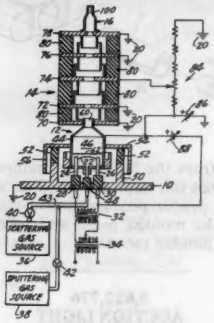
A knockdown-type target which can be readily packaged for handling and sale and which can be easily assembled for quick installation atop the turnable shaft of a stationary railway switch stand. It comprises a rod which provides a spindle whose upper end is provided with circumferentially spaced keeper slots for the slotted interconnected right angularly disposed distinguishably colored target blades. The upper screw threaded terminal of the spindle is provided with a cap-nut which maintains the replaceable blades in their set positions.

3,622,781
MASS SPECTROGRAPH WITH DOUBLE FOCUSING
Helmut Liebl, Eching, Germany, assignor to Institut fur Plasmaphysik G.m.b.H., Garching, Germany
Filed Apr. 29, 1970, Ser. No. 32,931
Claims priority, application Germany, July 30, 1969, P 19 38 770.3
Int. Cl. H01j 39/36
U.S. Cl. 250—41.9 ME 10 Claims



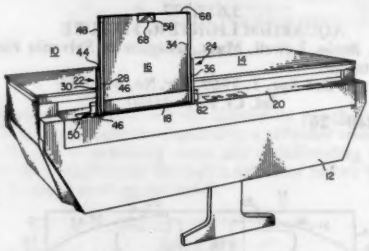
To provide for improved energy output and image resolution of Mattauch-Herzog type mass spectrographs, a beam-imaging means, which may be a separate electronic lens, or part of the electric field sector deflection arrangement suitably energized, is located in advance of the beam energy aperture, by a distance such that the exit slit of the ion source is imaged in the plane of the beam energy aperture. A second electronic lens is arranged between the beam energy aperture and the magnetic field sector deflection arrangement, of similar focal length, and arranged to image the target plane of the mass spectrograph at the same plane of the beam energy limiting means, so that the image focused thereon by the first imaging arrangement is received and focused on the target plane by the second electronic lens; the magnetic field sector deflection arrangement is rotated with respect to the electric field sector deflection arrangement by 180° to compensate for the effects of the lenses. The presence of the lenses permits independent adjustment of dispersion angles and energy band width of the ion beams.

3,622,782
BLOCKING APPARATUS AND METHOD UTILIZING A LOW-ENERGY ION BEAM
David P. Smith, Hudson, Wis., and James W. Salo, Cottage Grove Village, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Sept. 16, 1968, Ser. No. 775,565
Int. Cl. H01j 37/26
U.S. Cl. 250—49.5 13 Claims



Apparatus and method for producing a blocking pattern of the crystalline structure of a solid surface using a low-energy ion beam is shown wherein the low-energy ion beam is focused to a predetermined cross section and directed by an extended bored member onto a predetermined area of the solid surface at an angle greater than 5° and less than 90° enabling the ions to be scattered from the solid surface to produce a projected blocking pattern which impinges upon a fluorescent screen positioned substantially parallel to and spaced a predetermined distance from the solid surface for producing as a visual image the projected blocking pattern representing the crystalline structure of the solid surface. The extended bored member also collimates the focused ion beam into a smaller predetermined cross section and produces secondary electrons while collimating the focused beam to thereby produce a cloud of electrons which neutralize any charge at the solid surface produced by incidence of the collimated ion beam.

3,622,783
RETRACTABLE CASSETTE HOLDER FOR AN X-RAY TABLE
Roscoe Earl Miller, Indianapolis, Ind., assignor to Litton Medical Products, Inc., Des Plaines, Ill.
Filed Nov. 2, 1970, Ser. No. 86,026
Int. Cl. G03b 41/16
U.S. Cl. 250—58 9 Claims



An X-ray table is disclosed which includes a top surface which is normally in a horizontal position and a compartment on one side of the top surface. Retractable means are provided for supporting an X-ray cassette holder in a vertical radiographic position above and at one side of the top surface of the table and for withdrawing the cassette holder into

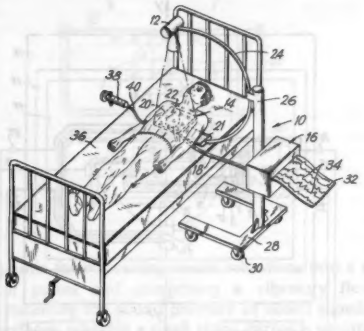
a parked vertical position below the top surface into the compartment.

3,622,784

SENSOR-ANALYZER SYSTEM WITH MEANS FOR SELECTING OUTPUT SIGNALS CORRESPONDING TO ACCURATELY POSITIONED SENSORS

Louis R. M. Del Guercio, 14 Pryer Lane, Larchmont, N.Y.

Filed Oct. 29, 1969, Ser. No. 872,092
Int. Cl. G01t 1/20
U.S. Cl. 250—71.5 R 14 Claims



An apparatus for monitoring the condition of body organs comprises detector means having a plurality of sensors, each of the sensors being effective to detect the condition of a body organ and to provide an output signal related to the detected condition, and means operatively connected to the sensors and effective to compare the output signal of each sensor with a predetermined nominal output signal corresponding to predetermined conditions of the body organs. Means are operatively connected to the comparator means and to the sensors to select those output signals bearing a predetermined relation to known output signals. The apparatus may be used in conjunction with an indicator material which is injected into the blood stream for passage through the specific body organs to be monitored. A radiant energy source is adapted to be positioned proximate the body organs so that the rays may be directed through the organs and through the indicator material, thereby to provide an output signal at the sensors proportional to the intensity of the rays passing through the body organs and the indicator material. In the preferred embodiment, the detector means comprises a plurality of spaced sensors which are arranged in a given array so that at least several of such sensors are positioned over the body organs to be monitored.

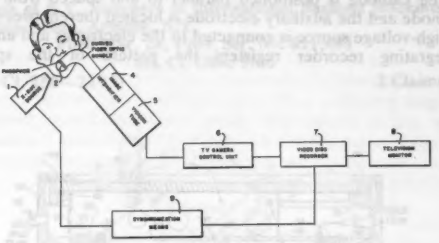
3,622,785

INTRAORAL MINIMAL RADIATION FLUOROSCOPE

James W. Irwin, Lake Oswego; William L. Parker, Milwaukie, and Bhim S. Savara, Portland, all of Oreg., assignors to The United States of America as represented by the Secretary of the Army

Filed Mar. 3, 1970, Ser. No. 16,099
Int. Cl. H01j 31/50
U.S. Cl. 250—77 4 Claims

A portable fluoroscopic unit which can be used intraorally or outside the body. The device comprises an X-ray source which generates a small number of short X-ray pulses, a curved fiber optic bundle with a phosphor deposited on the end intended for use within the oral cavity, an image intensifier, a television camera system, a video disc recorder, a television monitor, and synchronization means. An image is formed inside the mouth on the phosphor layer, this low-level image is then transmitted through the fiber optic bundle to an image intensifier. The amplified image is further amplified by the television camera system and is displayed on a monitor. A video recorder is used to freeze the image and retain a sufficient time for analysis without further X-ray exposure.

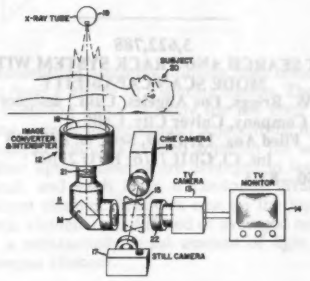


3,622,786

X-RAY IMAGE CONVERTER USING A HIGH PERFORMANCE FOLDED OBJECTIVE LENS

Bruce H. Walker, Liverpool, N.Y.; Robert Godbarsen, Jr., Wauwatosa, and John A. Bickford, Milwaukee, Wis., assignors to General Electric Company

Filed Nov. 19, 1969, Ser. No. 878,137
Int. Cl. G01t 01/20
U.S. Cl. 250—77 8 Claims



A high performance folded objective lens and a compact fluoroscopic apparatus incorporating the lens are disclosed. The objective lens has a relative aperture of f/1.0 and its performance has been optimized for use with an X-ray image intensifier tube. The lens consists of two spaced groups with a fold of 90° introduced between the two groups. The first group, which consists of four elements, is of relatively low power. The second group which consists of six elements is of relatively high power, designed particularly to have a short physical length. Provision has been made for makeup glass in the back focal region. The fluoroscopic apparatus, of which the lens is a part, achieves compactness measured along the axis of the X-ray beam by folding the optical axis. In a preferred application, this feature permits location of the fluoroscopic apparatus in the limited vertical dimensions available beneath an examination table without reduction in the efficiency of optical coupling to the conventional multiple output devices.

3,622,787

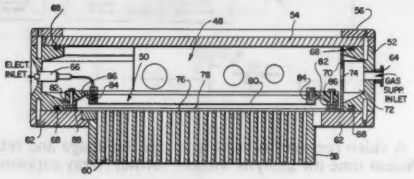
DEVICE FOR MAKING VISIBLE AND/OR REGISTERING γ-QUANTA DENSITIES OR TWO-DIMENSIONAL β-PARTICLE DENSITY DISTRIBUTIONS

Floris Timmer, A. D. Alphen, Rijn, Netherlands, assignor to AGA Aktiebolag, Lidingo, Sweden

Filed June 2, 1969, Ser. No. 829,591
Claims priority, application Netherlands, May 30, 1968, 6807625
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 1 Claim

A device for making visible and/or registering the flux density of gamma-quanta or the two-dimensional density dis-

tribution of beta-particles includes a gas and vapor-filled spark discharge chamber with a flat cathode, a flat, grid-form anode and a grid-form auxiliary electrode arranged therein. The cathode is positioned parallel to and spaced from the anode and the auxiliary electrode is located therebetween. A high-voltage source is connected to the electrodes and an integrating recorder registers the pattern of the spark



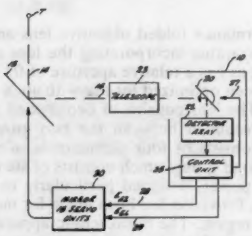
discharges between the auxiliary electrode and the anode such as caused by entering radiation. The auxiliary electrode is galvanically connected to the cathode and is spaced therefrom a distance such that the electron cloud which triggers the spark discharge is not attenuated by electron attachment in the space between cathode and auxiliary electrode.

3,622,788

TARGET SEARCH AND TRACK SYSTEM WITH DUAL MODE SCAN CAPABILITY

Raymond W. Briggs, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 11, 1969, Ser. No. 849,218
Int. Cl. G01t 1/16; H01j 29/02
U.S. Cl. 250—83.3 **12 Claims**



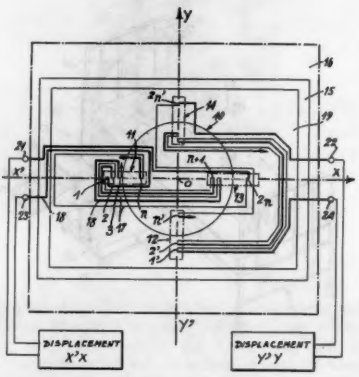
An infrared (IR) tracker receiver for searching and tracking a target from which IR energy is received. The receiver includes a linear detector array with a pair of chevron detectors on opposite sides of the center detector in the linear array. The receiver, which includes a scanning mirror, which is rotatable about an axis parallel to the linear array, is operable in a search mode in which the linear array is scanned back and forth over a moderate field of view. IR radiation, detected by the detectors, is used to generate error signals which are used to control the position of a reflecting mirror, which reflects IR radiation from a target to the scanning mirror, so as to cause the IR radiation to be detected at the center of the field of view. When the error signals fall below selected threshold levels, the system is switched to a track mode in which the detectors are scanned over a relatively small field of view, to provide a high rate of track information.

3,622,789

DEVICE FOR MEASURING THE DISPLACEMENT OF THE IMAGE OF AN OBJECT EMITTING INFRARED RAYS

Victor Volkoviski, Paris, France, assignor to Compagnie des Compteurs, Paris, France

Filed Dec. 23, 1969, Ser. No. 887,675
Claims priority, application France, Dec. 31, 1968, 182,312
Int. Cl. G01t 1/16
U.S. Cl. 250—83.3 H **13 Claims**



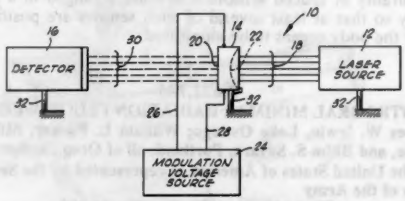
Device for measuring the displacement of the image of an object emitting infrared rays comprising at least two groups of series-connected thermoelements arranged symmetrically in relation with an origin point of the image of the object.

3,622,790

METHOD AND APPARATUS FOR MODULATING COHERENT ELECTROMAGNETIC RADIATION

Alfred T. Zavodny, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

Continuation-in-part of application Ser. No. 597,502, Nov. 18, 1966, now abandoned. This application May 1, 1969, Ser. No. 820,891
Int. Cl. H04b 9/00
U.S. Cl. 250—199 **13 Claims**



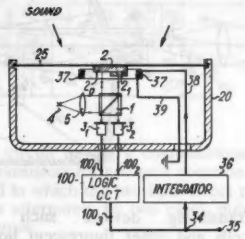
A method and apparatus for modulation of coherent electromagnetic radiation by controlled development of wave interference patterns for subsequent detection of time-varying signal indications. One form of apparatus includes a piezoelectric crystal-receiving coherent radiation and being structurally varied along the optical axis in response to a modulating voltage to cause proportionate variation of a predetermined interference pattern projection.

3,622,791

MICROPHONE CIRCUIT FOR DIRECT CONVERSION OF SOUND SIGNALS INTO PULSE MODULATED ELECTRIC SIGNALS

Patrice H. Bernard, 3, Avenue Montiagne, Paris, France

Filed May 7, 1970, Ser. No. 35,351
Claims priority, application France, June 27, 1969, 6921769
Int. Cl. H04b 9/00
U.S. Cl. 250—199 6 Claims



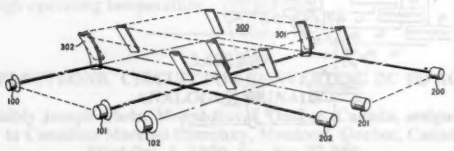
A microphone for converting sound vibrations into a train of electrical pulses and comprising a vibratory flexible diaphragm receiving the sound pressure of sound signals on one of its surfaces, wherein a small plane mirror is secured to the other diaphragm surface; the mirror is included in an optical interferometer energized by a light source and having two propagation paths, one of which is of fixed length and the other of which has a length varying in dependence upon time in accordance with the instantaneous position of the mirror and diaphragm; the light wave trains transmitted by the paths interfere in a chosen region of the interferometer to produce at least one sequence of images whose luminosity varies in dependence upon the variable path length; and such images are received by at least one photodiode delivering electric signals which are subsequently converted into a train of electric pulses.

3,622,792

OPTICAL SWITCHING SYSTEM

Jack A. Piccininni, Parsippany, N.J., assignor to Bell Telephone Laboratories, Incorporated, Berkeley Heights, Murray Hill, N.J.

Filed Dec. 29, 1969, Ser. No. 888,332
Int. Cl. H04b 9/00
U.S. Cl. 250—199 8 Claims



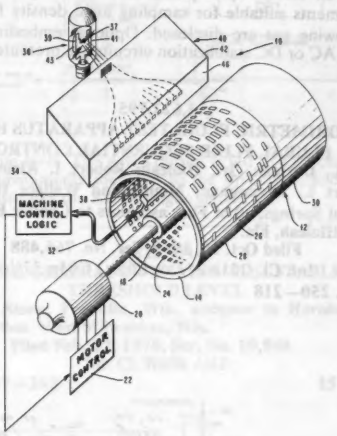
A system is disclosed that provides a switching capability on a selective basis between a plurality of laser beam inputs and a plurality of output light ports. The input devices and the output ports are arranged in a single plane with the inputs and outputs substantially perpendicular to each other. The matrix formed by the intersecting axes has a piezoelectric crystal positioned above each intersection. In response to an energizing potential, a particular crystal may be deformed into the plane of the light beams to reflect a selected input beam to a selected output.

3,622,793

FIBER OPTIC LIGHT TRANSMITTING ASSEMBLY COMPENSATING FOR SHADOWS

John J. Dalton, Rinebeck, and George P. Taylor, Red Hook, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 28, 1969, Ser. No. 811,481
Int. Cl. G08c 9/06
U.S. Cl. 250—219 D 2 Claims



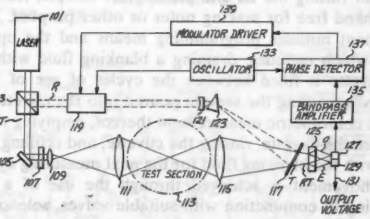
A light transmitting assembly utilizing fiber optic elements to pass light from a source to a sensing station. The assembly includes a mounting block or body for the fiber optic elements, having a single input channel adjacent the light source and plural output channels located adjacent the sensing station. The fiber optic elements are arranged in layers in the input channel, and each layer is randomly arranged in a separate output channel. Shadows cast on the input end of the fiber optic elements are diffused or averaged out over the layers, and a substantially equal amount of light emanates from each output channel.

3,622,794

IMPROVEMENTS IN FEEDBACK APPARATUS FOR STABILIZING HOLOGRAMS

Charles Ray Pond, Federal Way, and Patrick D. Texeira, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed June 23, 1969, Ser. No. 835,608
Int. Cl. G01j 1/20; G01n 21/26; G02b
U.S. Cl. 250—201 5 Claims



Method and apparatus for stabilizing the wave fronts at the recording plane of a hologram during hologram manufacture or while viewing a stored-beam interferogram. The disclosed system alleviates vibration isolation restrictions normally encountered with holographic work. A negative feedback system is utilized to monitor the change in intensity of a reconstructed optical wave front of light transmitted through

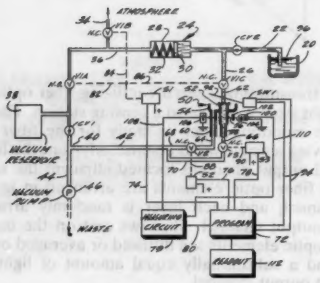
or reflected from the hologram, relate such change to a known change in phase, and to phase modulate either the reference or signal beam accordingly. The intensity is monitored in either the signal beam or reference beam portion of the transmitted or reflected light. The wave fronts are controlled by adjusting the phase of either beam in accordance with a control signal. The negative feedback system includes a photodetector, a band-pass amplifier, a phase detector, a signal generator, a summing amplifier, a high voltage amplifier and an electro-optic phase modulator. Special purpose embodiments suitable for sampling local density fluctuation in a flowing gas are disclosed. Optional embodiments employing AC or DC stabilization circuits are presented.

3,622,795

COLORIMETRIC FLUID TEST APPARATUS HAVING PLURAL FLUID SEQUENTIAL CONTROL

Ervin L. Dorman, Jr., Hialeah; Robert I. Klein, Hialeah; Robert L. Kreiselman, Miami, and Wallace H. Coulter, Miami Springs, all of Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Oct. 10, 1968, Ser. No. 766,488
Int. Cl. G01n *21/26*; E03b ; G01n *33/16*
U.S. Cl. 250—218 **28 Claims**



Apparatus to be used in making hemoglobin determinations of samples of blood and other colorimetric fluid tests, which includes colorimetric computing circuitry and a flow-through cuvette in the same housing, the flow-through cuvette being normally covered by a lid which is raised by the operator when pouring the test sample into the cuvette. The construction is such that the technician need use only one hand for raising the lid and pouring the sample, leaving the other hand free for making notes or other purpose. The lid movement initiates programming means and the operating cycle, which includes: draining a blanking fluid with which the cuvette is filled between the cycles of use of the apparatus, accepting the sample poured into the cuvette, making the colorimetric measurement thereof, emptying the sample from the cuvette, rinsing the cuvette, and refilling the cuvette with the blanking fluid for the next measuring cycle. All fluid movement is achieved through the use of a system operating in conjunction with suitable valves, solenoids and at least one spring-return operated, piston-type liquid dispenser.

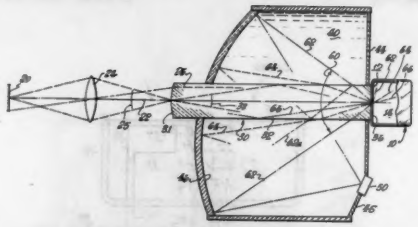
A novel cuvette construction provides concentric fluid-receiving mouths leading to inner and outer receptacles, the inner being the receptacle for the sample fluid, the outer being an overflow basin. The receptacles lead to respective independent drains, the inner being provided with a light transmitting section at which the fluid is traversed by a beam of radiant energy.

3,622,796

SELECTIVE COLLECTOR FOR THE WIDE-ANGLE PORTION OF A RADIATION BEAM

Clyde W. Harris, Santa Barbara, Calif., assignor to The Te Company, Santa Barbara, Calif.

Filed Nov. 13, 1969, Ser. No. 876,297
Int. Cl. G01n *21/22*
U.S. Cl. 250—227 **8 Claims**



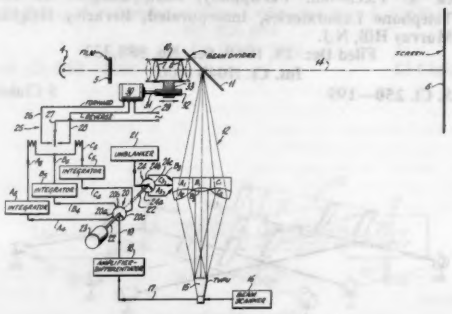
Radiation-translating devices such as resonance backscatter cells and other fluorescent bodies receive incident radiation in a concentrated beam and emit processed radiation in diffuse form. The present system separates such processed radiation from any unprocessed incident radiation specularly reflected from the cell window by receiving both in an optical light pipe coaxial with the unwanted radiation. The light pipe is laterally immersed in an optical medium of such index that the unwanted radiation is retained by total reflection in the pipe and a major portion of the initially diffuse processed radiation is transmitted through the sidewalls to form an annular beam of moderate solid angle suitable for further processing by conventional optics. The same light pipe may also supply the beam of incident radiation to the translating device.

3,622,797

RADIATION SENSITIVE AUTOMATIC FOCUS SYSTEM

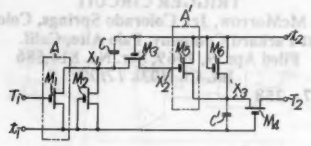
Herbert E. Bragg, Oxford, N.J., assignor to Twentieth Century-Fox Film Corp., New York, N.Y.

Filed July 2, 1970, Ser. No. 51,965
Int. Cl. H01j *7/24*
U.S. Cl. 250—234 **5 Claims**



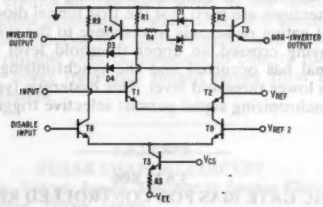
A system for automatically keeping a projected film image in sharp focus on a screen in any projection system by electronically comparing samples taken from the projected beam and moving the projection lens to its position for optimum focus. The selected sample is passed successively through optical systems of different focal lengths to form successive images on a television pickup tube, the outputs of the pickup tube for each successive image are integrated and the integrated outputs are sequentially compared in a differential relay circuit which controls a motor coupled to the projection lens for automatically moving the projection lens to its position for optimum focus.

3,622,798
INTEGRATED LOGIC CIRCUIT
Shigeyuki Ochi, and Tetsuo Ando, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Oct. 23, 1969, Ser. No. 868,800
Claims priority, application Japan, Oct. 23, 1968, July 31, 1969; 43/76921, 44/60884
Int. Cl. H03k *17/60*
U.S. Cl. 307—205 **6 Claims**



An integrated circuit having a combinational circuit and two field effect transistors formed on a common semiconductor substrate, and in which the two field effect transistors are made conductive alternately by two clock pulses without a direct current source.

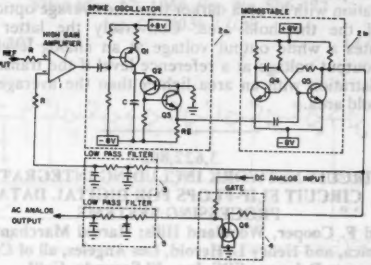
3,622,799
TEMPERATURE-COMPENSATED CURRENT-MODE CIRCUIT
Robert R. Marley, San Jose, and Walter C. Seelbach, Los Altos, both of Calif., assignors to Fairchild Camera and Instrument Corporation, Mountain View, Calif.
Filed Apr. 20, 1970, Ser. No. 29,967
Int. Cl. H03k *19/30, 19/34*
U.S. Cl. 307—215 **14 Claims**



A novel current-mode logic circuit employing temperature-compensating circuitry is disclosed. In one embodiment, a novel disable circuit is incorporated to drive both the inverted and the noninverted output voltage levels to high when the logic circuit is disabled. In another embodiment of a single rail circuit, a novel network is employed to maintain the base-collector drop at the input transistor at zero to prevent the input transistor from going into saturation at very high operating temperature.

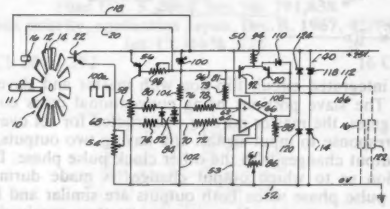
3,622,800
ELECTRONIC CIRCUIT FOR CONVERTING DC TO AC ANALOGUE SIGNALS
Shibly Joseph Abela, Mount Royal, Quebec, Canada, assignor to Canadian Marconi Company, Montreal, Quebec, Canada
Filed Oct. 1, 1970, Ser. No. 77,089
Claims priority, application Canada, Oct. 27, 1969, 65,983
Int. Cl. H03k *17/00*
U.S. Cl. 307—229 **7 Claims**

The disclosure teaches a completely electronic circuit for converting a DC analogue signal to a corresponding AC analogue signal. An AC reference signal is fed to the noninverting input terminal of a high gain differential amplifier whose output position modulates a pulse oscillator. The output of the oscillator is fed to a first low pass filter, which has a cutoff frequency slightly higher than the frequency of the AC reference. The output of the first filter is fed to the inverting terminal of the amplifier so that, when the gain of the amplifier is great enough, the output of the filter is substantially identical to the AC reference signal. The output of the oscillator is fed to the control terminal of a gate whose signal input is fed with the DC analogue signal so that the output of the gate is the pulse train of the oscillator multiplied by the



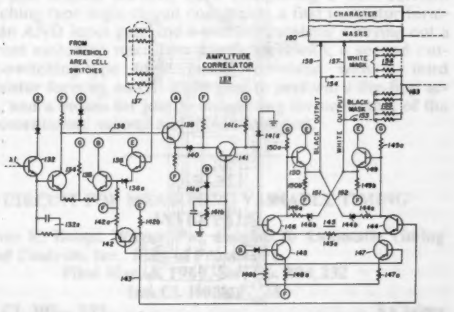
DC analogue level. The gated output is fed to a second filter, which is substantially identical to the first filter, and whose output constitutes the AC analogue signal.

3,622,801
PULSE GENERATOR HAVING ADJUSTABLE THRESHOLD LEVEL
David W. Stone, Franklin, Wis., assignor to Harnischleger Corporation, West Milwaukee, Wis.
Filed Feb. 12, 1970, Ser. No. 10,846
Int. Cl. H03k *1/12*
U.S. Cl. 307—262 **15 Claims**



A pulse generator generates a pair of complementary pulse train output signals. The pulse generator includes input circuitry which provides the single pulse train signal and a bias signal. These signals are provided to an operational amplifier, the output signal of which alternately energizes a pair of current control devices. The magnitude of the bias signal is adjustable to alter the threshold level of the pulse generator.

3,622,802
DIFFERENTIAL AMPLIFIER SYSTEM
Leonard J. Nunley, Dallas, Tex., assignor to Recognition Equipment Incorporated
Original application June 7, 1965, Ser. No. 461,825. Divided and this application May 15, 1969, Ser. No. 853,573
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 **4 Claims**



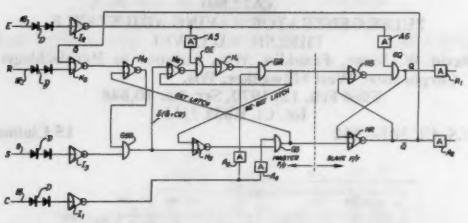
Character recognition is accomplished by providing for comparison of the output of each transducer in a retina with

the average of a selected number of transducers in a surrounding threshold area. Means are then provided for generating a black output voltage at an analog level and a white output voltage at reference level if the transducer is in registration with an area darker than the average optical density of the threshold area. Conversely the latter means generates a white output voltage at an analog level and a black output voltage at a reference level if the transducer is in registration with an area lighter than the average of the threshold area.

3,622,803
CIRCUIT NETWORK INCLUDING INTEGRATED CIRCUIT FLIP-FLOPS FOR DIGITAL DATA PROCESSING SYSTEMS

Donald F. Cooper, Woodland Hills; Harold Marchant, Santa Monica, and Henry L. Herold, Los Angeles, all of Calif., assignors to Delaware SDS, Inc., El Segundo, Calif.

Continuation of application Ser. No. 460,408, June 1, 1965, now abandoned. This application Apr. 13, 1970, Ser. No. 28,181
Int. Cl. H03k *23/04*
U.S. Cl. 307—247 **8 Claims**

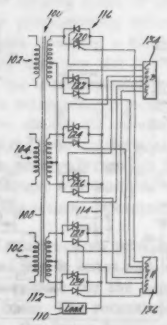


An integrated circuit flip-flop with master and slave portions. The slave portions being conventional cross coupled NOR gates, the master portion constructed for set over ride reset response to input signals and having two outputs, only one output changes with the other clock pulse phase. Determination as to which output changes is made during the clock pulse phase when both outputs are similar and in dependence upon set and/or reset inputs then received. The state of the slave portion is determined by which one of the master outputs changes with the clock. The integrated circuit flip-flop is operated at a supply voltage lower than the voltage used for biasing discrete circuit logic and flip-flop input and output, with noise rejection diodes connected at the input.

3,622,804
SYSTEM FOR PERIODICALLY REVERSING ELECTRICAL ENERGY THROUGH A LOAD

Claybourne Mitchell, Jr., Ann Arbor, Mich., assignor to The Udylite Corporation, Warren, Mich.

Continuation of application Ser. No. 665,497, Sept. 5, 1967. This application Aug. 19, 1970, Ser. No. 65,267
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 T **8 Claims**

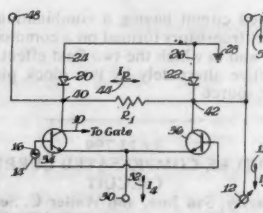


A system for feeding electrical energy from an alternating current source to a load through a rectifier arrangement, the arrangement comprising one or more pairs of back-to-back rectifying devices connected in parallel between an alternating current source and the load. Each of the elements in the pairs of rectifying elements are separately controlled such that the system may provide a main current flow of a preselected configuration and wherein the opposite rectifying element is periodically selectively energized to provide a periodic reversal of the energy through the load.

3,622,805
TRIGGER CIRCUIT

Richard H. McMorrow, Jr., Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 9, 1969, Ser. No. 814,586
Int. Cl. H03k *17/00*
U.S. Cl. 307—258 **4 Claims**

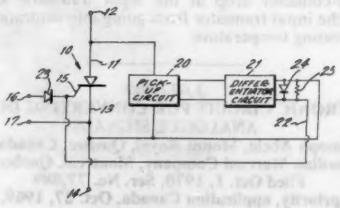


A trigger circuit uses a pair of tunnel diodes—one acting as a gate and trigger element and the other acting as a control diode for the first—to generate triggering pulses. The circuit interconnections are such that the first tunnel diode provides an output gating pulse only in response to the synchronizing signal having crossed an upper threshold level provided a reset signal has occurred and the synchronizing signal has crossed a lower threshold level. This hysteresis type response to the synchronizing signal permits selective triggering of the circuit.

3,622,806
DYNAMIC GATE BIAS FOR CONTROLLED RECTIFIERS

Richard J. Williams, Carson, Calif., assignor to International Rectifier Corporation, Los Angeles, Calif.

Filed Nov. 13, 1969, Ser. No. 876,478
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 N **6 Claims**



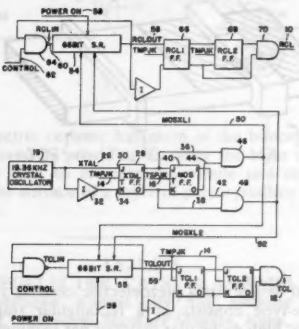
A pickup circuit connected to the main power circuit of a controlled rectifier generates an output signal responsive to the forward rate-of-change-of-voltage across the main terminals of the controlled rectifier. This output signal is then connected to the gate of the controlled rectifier as a negative gate bias, the magnitude of which is related to the rate-of-change-of-forward-voltage across the controlled rectifier device.

3,622,807

PULSE GENERATING SYSTEM FOR SYNCHRONIZING TERMINAL DATA FREQUENCY WITH COMMUNICATION LINE TRANSMISSION SPEED

Fernand D. Gillet, and Philipe Gransart, both of Bruxelles, Belgium, assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 19, 1969, Ser. No. 878,073
Int. Cl. H03k 5/04
U.S. Cl. 307—265 3 Claims



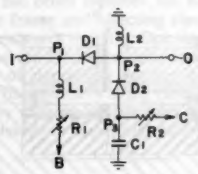
A pulse generating system generating a series of relatively low-speed or low-frequency pulses from a high-speed stable crystal oscillator, utilizes a 66-stage MOS shift register as a divisor. A second source of very high-frequency clock pulses provides a control of the pulse width of the several pulses within the pulse generating system. Disclosed herein are two systems which function in a similar manner and each are provided with suitable control members to control the generation of the lower frequency output pulses from the pulse generating system.

3,622,808

PULSE SHAPING CIRCUIT

Kozo Uchida, Tokyo, Japan, assignor to Iwatsu Electric Company Limited, Tokyo, Japan

Filed Sept. 15, 1969, Ser. No. 858,042
Claims priority, application Japan, Sept. 20, 1968, June 14, 1969; 43/67643, 44/47080
Int. Cl. H03k 17/00
U.S. Cl. 307—268 9 Claims



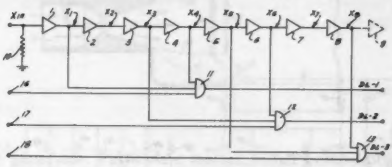
A pulse shaping circuit for producing high-frequency pulses of extremely steep waveform is comprised by a first snap-off diode connected between input and output terminals, a second snap-off diode connected to the juncture between the first snap-off diode and the output terminal and an impedance connected between the ground and the juncture between the input terminal and the first snap-off diode, the first and second snap-off diodes being poled oppositely with respect to the output terminal. The width of the shaped pulses is determined by the setting of the impedance. Sources of DC supply of suitable polarities may be connected to said impedance and said second snap-off diode.

3,622,809

ACTIVE DELAY LINE

Peter R. Williams, Wilton, Conn., assignor to Chemical Bank, New York, N.Y.

Filed Mar. 12, 1969, Ser. No. 806,472
Int. Cl. H03k 17/28
U.S. Cl. 307—293 14 Claims



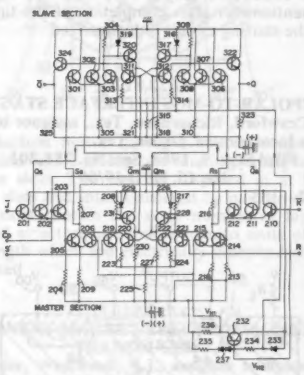
An electrical delay line including a series of active stages interconnected so that the leading edge of the pulses being propagated through the active stages connected in cascade controls both the turn-on and turnoff of the delayed output pulses to provide delayed pulses having constant amplitude and constant width.

3,622,810

CURRENT SWITCHING TYPE FLIP-FLOP CIRCUIT DEVICE

Sadao Sasaki, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co. Ltd., Kawasaki-shi, Japan

Filed Dec. 5, 1968, Ser. No. 791,838
Claims priority, application Japan, Dec. 8, 1967, 42/78396
Int. Cl. H03k 3/26
U.S. Cl. 307—291 16 Claims



A current-switching-type flip-flop circuit device including first and second sections each comprising a first current-switching-type logic circuit comprising a first transistor forming an AND input gate and a second transistor carrying out a current switching operation jointly therewith, a second current-switching-type logic circuit provided with a third transistor forming an OR input gate to perform a flip-flop action, and a means for jointly connecting the collectors of the aforementioned second and third transistors.

3,622,811

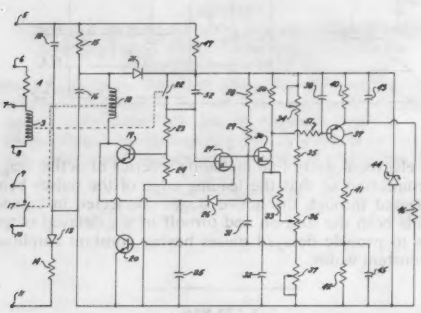
CIRCUIT FOR MEASURING VARIABLE TIMING INTERVALS

Grover K. Houpt, Wayne, Pa., assignor to Automatic Timing and Controls, Inc., King of Prussia, Pa.

Filed Mar. 4, 1969, Ser. No. 804,232
Int. Cl. H03k 17/28
U.S. Cl. 307—293 5 Claims

This timing circuit includes a first FET which is normally conducting in the absence of a starting signal and is in shunt

with a timing capacitor. The timing capacitor is in series with a resistor and their junction is connected to the first FET and to the gate of a second FET. The second FET has its source biased at a voltage determined by the setting on a timing dial potentiometer. It will not conduct until the charge built up on the timing capacitor, after the first FET turns off, exceeds the bias and the inherent pinch-off voltage of the second FET. When the second FET conducts, a voltage is developed across another resistor which is applied to turn on a



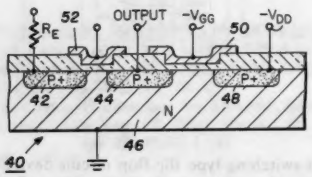
transistor that is in series with a resistor. When the transistor turns on, the voltage across the latter resistor turns on two other transistors in series with an inductor. Energization of the inductor actuates a switch associated with the load circuit which is to be controlled. A diode is connected between the second FET and the series-connected transistors to keep the second FET conductive despite an increase in the setting of the dial potentiometer after completion of the timing cycle, but before the starting circuit is deengerized.

3,622,812

BIPOLAR-TO-MOS INTERFACE STAGE

Robert H. Crawford, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 9, 1968, Ser. No. 758,201
Int. Cl. H01l *19/00*
U.S. Cl. 307—303 **4 Claims**



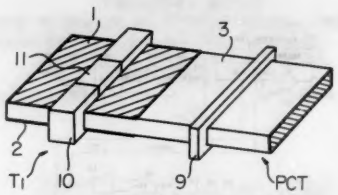
An interface stage on an MOSFET-integrated logic circuit for shifting the positive output voltage of a bipolar logic circuit to the negative input voltage of an MOSFET logic circuit comprised of a bipolar transistor the emitter of which is connected to the output of the bipolar logic circuit, the base of which is grounded, and the collector of which is connected through a resistance to the negative drain supply voltage and to the logic input of the MOSFET logic circuit. The bipolar transistor is a surface oriented transistor formed by two spaced P-type diffusions made on the same N-type substrate by the same diffusion step used to form the source and drain diffusions of the MOSFETs. The bipolar transistor can also be used as an MOSFET with the provision of a gate electrode, and in this configuration provide an inhibit logic function and serve as an alternative input for the negative logic voltage from another MOSFET circuit.

3,622,813

TERMINAL DEVICE FOR PIEZOELECTRIC CERAMIC TRANSFORMER

Osamu Kumon, Itami, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Oct. 9, 1970, Ser. No. 79,437
Claims priority, application Japan, Oct. 18, 1969, 44/99219
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **13 Claims**



A terminal device for a piezoelectric ceramic transformer of the plate-type consists of a rectangular ring made of rubber-elastic high-molecular material has two metallic members. The metallic members are mounted at opposite portions of the ring so as to contact respective input electrodes of the transformer when the terminal device is attached to the input section of the transformer. Input leads for the transformer will be connected to the respective metallic members serving as interconnection between the input electrodes and input leads.

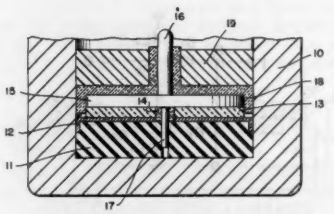
A terminal device for the output of the ceramic transformer is attached around the output section of the transformer so that the output can be taken out from any point of the output section.

3,622,814

NEGATIVELY CHARGING PIEZOELECTRIC POWER SUPPLY

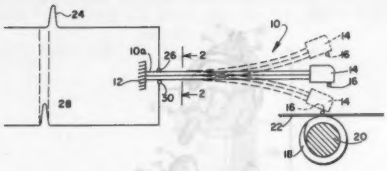
Thomas E. Carlson, Hopkins, Minn., assignor to The United States of America as represented by the Secretary of the Navy

Filed June 22, 1970, Ser. No. 56,022
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.4 **4 Claims**



A negatively charging piezoelectric power supply including a case, piezoelectric crystal, set back weight, probe switch and rubber disk such that on accelerating the projectile containing the piezoelectric power supply, the probe shorts the charge generated by the crystal to the case through compressing the rubber disk by the weight and on lessening of the acceleration the short is removed and a negative charge produced by the crystal relaxation.

3,622,815
HIGH RELIABILITY CERAMIC BENDER
Hugo W. Schafft, Des Plaines, Ill., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Mar. 25, 1970, Ser. No. 22,518
Int. Cl. H01v 7/00
U.S. Cl. 310—8.6 2 Claims



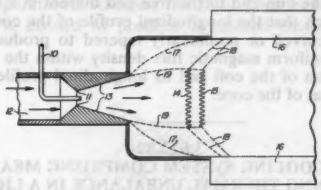
A piezoelectric ceramic hammern of the bimorph bender-type is improved by providing an outer foil layer of stainless steel, or the like, to increase the tensile and compression strength at the surface of a layer of polycrystalline piezoelectric material.

3,622,816
PIEZOELECTRIC CRYSTAL ASSEMBLY
George M. McGrew, Kansas City, Mo., assignor to Electro Dynamics Corporation, Shawnee Mission, Kans.
Filed June 12, 1970, Ser. No. 45,658
Int. Cl. H01v 7/00
U.S. Cl. 310—9.4 6 Claims

An improved piezoelectric crystal assembly, for minimizing the space required by and the cost of manufacturing piezoelectric units employing circular disc-type crystal elements having plated or otherwise deposited electride and contact structures thereon, is provided by housing the crystal element within an annular insulting frame having a cupped conductive member fitted upon each open end thereof, with each such member having a series of integral tabs angularly extending toward the other member for holding the crystal element within the frame and effecting electrical connection with the contact structures thereon. Openings are provided in each member to permit frequency adustment after assembly by the technique of depositing further electrode material upon the element, the assembly being closed and sealed after such adjustment by affixing covers over said openings and encapsulating the assembly in potting material.

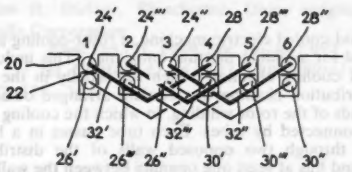
3,622,817
SHOCK INDUCED COMBUSTION AND IONIZATION MHD APPARATUS
La Var King Isaacson, Salt Lake City, Utah, assignor to The University of Utah
Filed Feb. 16, 1970, Ser. No. 11,500
Int. Cl. H02m 4/02
U.S. Cl. 310—11 3 Claims

The invention disclosed herein relates to the conversion of chemical energy contained in fossil fuels and other combustible products into electrical energy by the extraction of electrons from ionized combustion products as they pass through the magnetic field of a magnetohydrodynamic electric generator, all of which occurs in the absence of seeding by cesium or other elements. Combustion and ionization of the combustible products is accomplished by passage of the combustible products through a shock wave created by the change in flow of the gaseous fuel-air mixture from supersonic flow in the expansion zone of an expansion nozzle to subsonic flow in the region of the magnetohydrodynamic



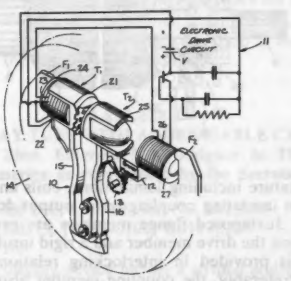
electric generator. Particulate matter, either combustible or noncombustible, ia also introduced into the gaseous flow upstream of the shock wave in order to subject the particulate matter to a nonequilibrium thermal shock upon the surface of the particles of the additional production of free electrons which are then extracted by the magnetohydrodynamic electric generator.

3,622,818
LINEAR INDUCTION MOTOR WINDING
Jean Pol Payen, Grenoble, France, assignor to Merlin Gerin Societe Anonyme, Grenoble, France
Filed Nov. 25, 1969, Ser. No. 879,873
Claims priority, application France, Dec. 20, 1968, Dec. 20, 1968; 179,774, 179,776
Int. Cl. H02k 41/04
U.S. Cl. 310—13 4 Claims



Linear induction motor having a slotted magnetic field structure wound with a multiphase winding having legs which extend in the slots. The legs are disposed in at least two layers in the slots and interconnected by pairs in each layer whereby all slots contain the same number of layers. The magnetic field structure is subdivided into units of double-pole pitch length which are electrically independent and not cross-connected.

3,622,819
PERMANENT MAGNET ELECTROMAGNETIC TRANSDUCER
Dale R. Koehler, Westwood, N.J., assignor to Bulova Watch Company, Inc., New York, N.Y.
Filed June 11, 1970, Ser. No. 45,326
Int. Cl. H02k 33/02
U.S. Cl. 310—25 7 Claims



An electromagnetic transducer for actuating the tuning fork of an electronic watch. The transducer is constituted by

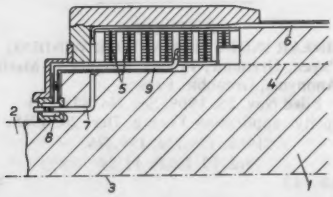
a magnetic element secured to a tine of a fork which causes the element to vibrate relative to a stationary multiturn coil. The magnetic element is formed by a cylindrical cup having a rodlike permanent magnet core supported coaxially therein to define an annular airgap. The core diminishes in cross section from the cup end to the free end thereof in a nonlinear manner such that the longitudinal profile of the core is continuously curved or nonlinearly tapered to produce a substantially uniform magnetic flux density within the core, the cross section of the coil and its longitudinal profile complementing that of the core.

3,622,820

ROTOR COOLING SYSTEM COMPRISNG MEANS FOR AVOIDING THERMAL UNBALANCE IN A LIQUID-COOLED ELECTRICAL MACHINE

Ove Tjernstrom, Vretstorp, Sweden, assignor to Allmanna Svenska Elektriaka Aktiebolaget, Vasteras, Sweden

Filed Sept. 21, 1970, Ser. No. 73,804
Claims priority, application Sweden, Sept. 30, 1969, 13,416/1969
Int. Cl. H02k *9/19*
U.S. Cl. 310—53 **3 Claims**



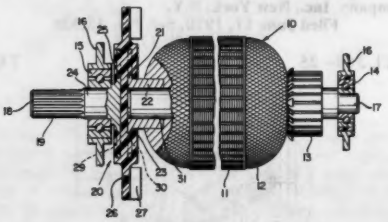
In a liquid-cooled electric machine, a rotor-cooling system is provided for avoiding thermal unbalance. This includes a number of cooling channels which run axially in the rotor and a distribution chamber for coolant arranged outside of the coil ends of the rotor winding, to which the cooling channels are connected by tubes. Each tube passes in a liquid-type way through two opposed walls of the distribution chamber and has at least one opening between the walls into the interior of the chamber. The opening is in the form of an elongated slot and its size may be varied by a pistonlike member which can be adjusted longitudinally of the tube to cover more or less of the opening.

3,622,821

DOUBLE-INSULATED MOTOR ARMATURE

George E. Maffey, Jr., Timonium, Md., assignor to The Black and Decker Manufacturing Company, Towson, Md.

Filed Mar. 27, 1970, Ser. No. 23,223
Int. Cl. H02k *9/06*
U.S. Cl. 310—60 **16 Claims**



An armature including laminations, coils and a commutator and an insulating coupling to an output drive member is disclosed. Juxtaposed flange members are provided on the shaft and on the drive member and a rigid insulating coupling member is provided in interlocking relationship with the flanges. Preferably, the coupling member also serves as the hub for the motor-cooling fan and, preferably, the fan and coupling member are integrally molded in place over the two flange members.

3,622,822

ENCLOSURE FOR ELECTRIC MOTOR

Warren A. Lofstrand, Wethersfield, Conn., assignor to North American Philips Corporation, New York, N.Y.

Filed Mar. 4, 1970, Ser. No. 16,453
Int. Cl. H02k *5/04*
U.S. Cl. 310—89 **4 Claims**

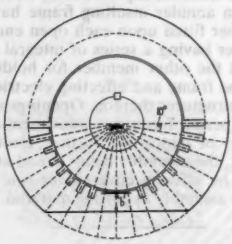
An enclosure comprising a first semicylindrical shell and a second semicylindrically shell juxtaposed to the first shell, the two shells being formed to fit around an object of nonuniform shape. A flexible ligamentous portion integral with both shells connects them together and acts as a hinge. One cooperating portion of a releasable lock is provided on each of the shells, one portion of the lock comprising a pair of laterally extending resilient fingers, each of the fingers having a shoulder or barb at its free end and the other a protrusion with a channel to receive the fingers. The shoulders on the fingers extend beyond the channel and hook behind it so as to prevent their inadvertent withdrawal.

3,622,823

ROTARY ELECTRIC MACHINES

Alexander Richard William Broadway, Westbury-on-Trym; William Fong, Westbury-on-Trym, and Gordon Hindle Rawcliffe, Bristol, all of England, assignors to National Research Development Corporation

Filed Mar. 11, 1970, Ser. No. 18,565
Claims priority, application Great Britain, Mar. 24, 1969, 15,296/69
Int. Cl. H02k *1/12*
U.S. Cl. 310—254 **3 Claims**



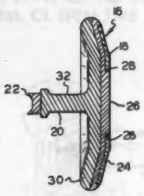
A three-phase motor with a stator winding wound on flat-sided punchings. The number of flat sides must not correspond to the pole-number. The stator slots are radial and those opposite flats on the stator punchings are shalower than those opposite the corners and in some examples are omitted. The three-phase winding used is derived from a regular double-layer, uniform-pitch, diamond coil winding by omitting blocks of coils from the top and bottom layers, the omitted coil blocks being equal in number to the flat sides, being equally spaced apart in the top and bottom layers and in coincident, overlapping or adjacent slots in the top and bottom layers.

3,622,824

COMPOSITE X-RAY TUBE TARGET

Zed J. Atlee, Elmhurst, Ill., assignor to Picker Corporation, White Plains, N.Y.

Filed June 30, 1969, Ser. No. 837,677
Int. Cl. H01j 35/10
U.S. Cl. 313—55 3 Claims



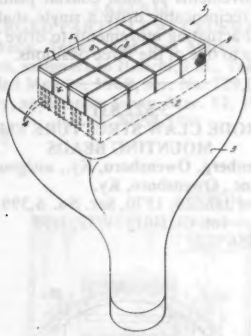
A composite rotating X-ray tube target having a molybdenum head and an annular target face of 218 tungsten bonded to the molybdenum head, the head desirably having a unitary stem and backing portion of columbium.

3,622,825

MOSAIC ACOUSTIC TRANSDUCER FOR CATHODE-RAY TUBES

Grant S. Bennett, San Mateo, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

Filed Mar. 24, 1969, Ser. No. 809,683
Int. Cl. H01j 31/49; H04b 11/00; H01j 31/08
U.S. Cl. 313—66 15 Claims



A transducer mosaic includes a plurality of spaced transducers formed with piezoelectric material for converting incident ultrasonic energy into an electrical signal. The piezoelectric is supported on one side by a pressure release barrier, suitably a conductive syntactic foam. The syntactic foam material is a mixture of miniscule hollow glass balls and conductive epoxy resin.

3,622,826

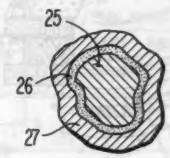
PHOSPHOR SCREEN COMPRISING TWO KINDS OF PARTICLES, EACH HAVING PHOSPHOR CORE AND PHOSPHOR COATING

Martin Robert Royce, Lancaster, Pa., assignor to RCA Corporation

Filed Nov. 28, 1969, Ser. No. 880,865
Int. Cl. H01j 29/18, 3/20
U.S. Cl. 313—92 PH 2 Claims

An electron tube having a penetration-type luminescdnt screen which includes phosphor particles of two different types. A builtup particle of the first type is comprised of a core of a first phosphor, a coating of an inert electron-absorbing layer, and an overcoating thereon of a third phosphor. A builtup particle of the second type is comprised of a core of a second phosphor, a coating of an inert electron-absorbing layer, and an overcoating thereon of the third phosphor.

At low operational voltages, the third phosphor (the overcoating) is excited to produce a colored emission to the viewer. At higher operational voltages, the first phosphor and the second phosphor (cores) of similar persistences are simultaneously excited to emit in different colors to produce a combined light of a white or off-white emission to the viewer. Thereby, the viewer may observe an information display in white or off-white and a related display in an easily distinguishable contrasting color such as red.

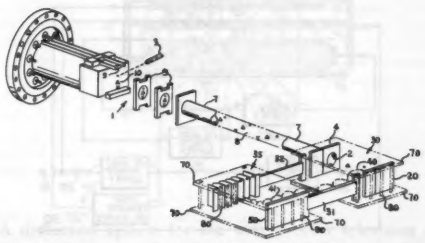


3,622,827

MATRIX ASSEMBLY FOR ALIGNING ELECTRON MULTIPLIER COMPONENTS

Willaim H. Shriner, Blanchester, Ohio, assignor to The Bendix Corporation

Filed Oct. 21, 1969, Ser. No. 867,997
Int. Cl. H01j 43/16, 39/34; B01d 59/44
U.S. Cl. 313—103 1 Claim



An apparatus for precisely locating the components at the input and output of an electron multiplier which includes mounting plates having precisely located holes for securing a plurality of arms in a predetermined arrangement. Mounted on the arms of the compoents which are fixed in their proper position when the apparatus is assembled.

3,622,828

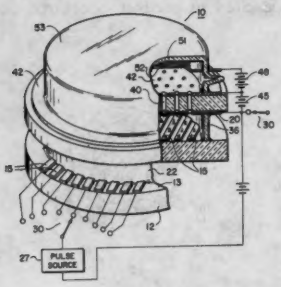
FLAT DISPLAY TUBE WITH ADDRESSABLE CATHODE

Mortimer H. Zinn, Elberon, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Dec. 1, 1969, Ser. No. 881,030
Int. Cl. H01j 43/06; H01i 43/08
U.S. Cl. 313—103 10 Claims

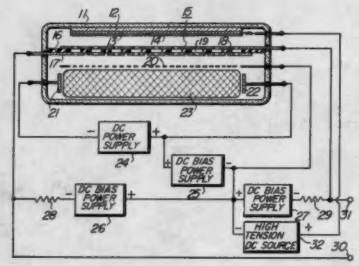
A flat panel display device having a striped address system wherein an electron beam from a selected one of several elemental emitting strips of either a field emission type cathode, a photoemissive cathode or a thermionically emissive cathode is caused to impinge upon a corresponding region of

a phosphor screen to produce visible emission from said region, said device including means for multiplying the number



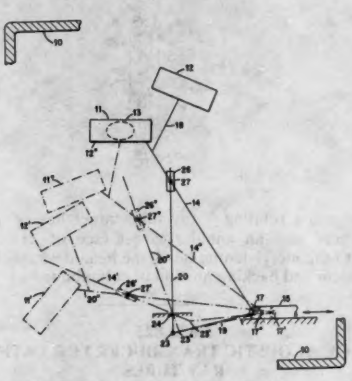
of electrons emitted from the cathode so as to permit use of a cathode of smaller current density.

3,622,829
FLUORESCENT SCREEN DISPLAY PANELS
Masanori Watanabe, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Nov. 22, 1968, Ser. No. 778,279
Claims priority, application Japan, Nov. 28, 1967, Nov. 28, 1967, Nov. 28, 1967, Nov. 28, 1967; 42/77143, 42/77144, 42/77145, 42/77147
Int. Cl. H01j *1/62, 63/04*
U.S. Cl. 313—108 R **11 Claims**



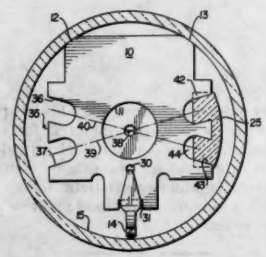
A display panel useful for realizing a very thin panel-shaped letter or figure display device or a panel-shaped TV set, wherein the small region of the fluorescent screen may be illuminated by the bombardment of charged particles; the control electrode, formed by providing a plurality of parallel metal electrode sheets on one principal surface of the insulating substrate, a plurality of parallel metal electrode sheets on the other principal surface orthogonal to the direction of arrangement of said former metal electrode sheets and holes penetrating through the insulating substrate at the part where said metal electrode sheets intersect across the insulating substrate, being made to contact the discharge plasma generated between the discharge electrodes; electrons or ions being taken out of the discharge plasma by applying a signal voltage to said metal electrodes of the control electrode and made to pass through the holes selectively, the transparent electrode comprising the fluorescent screen being provided on the side opposite to said discharge plasma with respect to said control electrode in parallel with said electrodes; and the electrons or ions passing through said holes being accelerated and made to collide with the fluorescent screen by the high voltage applied to said transparent electrode.

3,622,830
OBJECT-POSITIONING LINKAGE HAVING A SINGLE-SHAFT PLURAL-PISTON ACTUATOR
Haile S. Clay, Los Altos Hills, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission
Filed Feb. 11, 1970, Ser. No. 10,515
Int. Cl. H01j *1/88*
U.S. Cl. 313—147 **7 Claims**



A pair of targets one of which is positioned in the path of a particle accelerator beam or both targets are removed from the beam path by means of a linkage which carries the targets in long vertical movements in response to short horizontal-actuating movements of dual coaxial pistons which differentially and reciprocably drive a single shaft through the short horizontal-actuating movements to drive the linkage to carry the targets to one of the three positions.

3,622,831
CRT ELECTRODE CLAW STRUCTURE EMBEDDED IN MOUNTING BEADS
Horst H. Blumenberg, Owensboro, Ky., assignor to Kentucky Electronics, Inc., Owensboro, Ky.
Filed Jan. 28, 1970, Ser. No. 6,399
Int. Cl. H01j *19/52, 1/98*
U.S. Cl. 313—256 **5 Claims**



An electron gun assembly has a flat centering plat which engages the inner surface of a CRT tube envelope by means of at least three projections extending from the plate, one of which is a spring member, to thereby hold the gun axis in a predetermined alignment position with close tolerances and to permit the gun to slip into and firmly engage the envelope inner surface. The gun has electrodes mounted between a pair of glass beads into which specially shaped edges of the gun electrodes are embedded. Thus, the flat plate has claw structure for engaging the beads which is formed by two U-shaped indentations generally converging toward the center of the plate to thereby permit a thin glass bead to engage and hold the gun elements firmly without fracture.

3,622,832

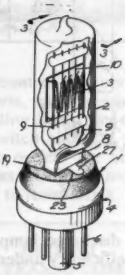
INTERCHANGEABLE TUNGSTEN HALOGEN LAMP

Joseph H. Schlessel, Great Neck, and Fred M. Pintus, White Plains, both of N.Y., assignors to Airequipt Inc., New Rochelle, N.Y.

Continuation of application Ser. No. 816,843, Apr. 16, 1969, now abandoned, which is a continuation of application Ser. No. 611,417, Jan. 24, 1967, now abandoned. This application May 11, 1970, Ser. No. 37,395

Int. Cl. H01j 5/48

U.S. Cl. 313—318 4 Claims



An incandescent lamp of the type known as a halogen cycle lamp having a quartz envelope selectively positioned in a supporting base of the socket-type having a centering and stabilizing pin and surrounding electric prongs and formed for use interchangeably in sockets adapted for regular incandescent lamps.

3,622,833

CHARGED PARTICLE ACCELERATOR

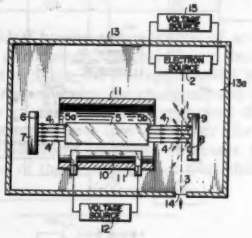
Yasutsugu Takeda, Tokyo, and Isao Matsui, Kokubunji-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo-to, Japan

Filed May 14, 1968, Ser. No. 729,013

Claims priority, application Japan, Mar. 12, 1967, 42/29795

Int. Cl. H05h 5/00

U.S. Cl. 315—4 15 Claims



A device, in which light waves are directed to the surface of a periodic structure constituted of a material having high reflectivity of the light wave used, whereby a field having a periodic strength of an electric field vector of the light wave is generated in the vicinity of the surface of said periodic structure, and the energy of the light wave is supplied to the charged particles while said charged particles pass through said field, thereby accelerating the charged particles.

3,622,834

HIGH-EFFICIENCY VELOCITY MODULATION TUBE EMPLOYING HARMONIC PREBUNCHING

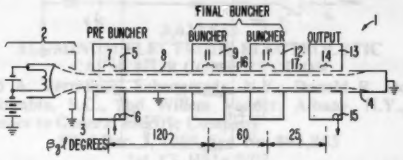
Erling L. Lien, Los Altos, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Apr. 15, 1970, Ser. No. 28,792

Int. Cl. H01j 23/20

U.S. Cl. 315—5.39 9 Claims

A velocity modulation tube is disclosed. The tube includes beam field interaction circuits arranged along the beam path in the following order: prebuncher, floating buncher resonator, and output circuit. The prebuncher, buncher and output circuits are all tuned for a fundamental mode of resonance in the vicinity of the pass band of the tube. An abnormally long drift space, i.e., greater than 90° and preferably about 120° of reduced plasma angle is provided between interaction gaps of



the prebuncher and next succeeding floating buncher, whereby the second harmonic space charge component of the resultant current density modulation of the beam produces favorable bunching of the electrons at the entrance of the buncher cavity to obtain enhanced conversion efficiency for the tube.

3,622,835

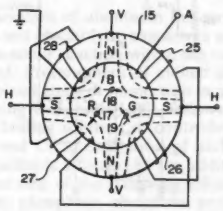
CURRENT-GENERATING CIRCUIT

Norman W. Parker, Wheaton, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Dec. 10, 1969, Ser. No. 883,754

Int. Cl. H01j 29/50

U.S. Cl. 315—13 10 Claims



A deflection system for use with a color television multibeam cathode-ray tube utilizes a toroid deflection yoke with the distribution of the vertical and horizontal deflection windings being such as to provide a uniform deflection field within the toroid. An additional set of four series-connected, oppositely wound correction windings are wound on different quadrants of the toroid yoke; and a correction current is applied to the correction windings in the form of a current corresponding to the horizontal deflection signal modulated by the vertical deflection signal for correcting misconvergence of the beams.

3,622,836

DEFLECTION AMPLIFIER WITH DYNAMIC FOCUS CONTROL

Asger Torben Nielsen, San Diego, Calif., assignor to Eastman Kodak Company, Rochester, N.Y.

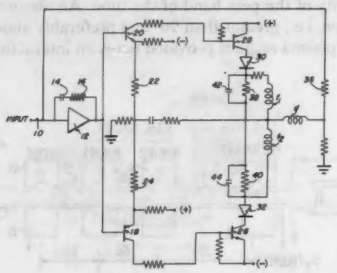
Filed Mar. 25, 1968, Ser. No. 715,896

Int. Cl. H01j 29/76

U.S. Cl. 315—27 TD 6 Claims

A deflection amplifier is provided which includes diodes in its output which disconnect the output drive from the deflection yoke during a transient so that the amplifier will not go into saturation and thus is able to regain control when the

transient returns from its peak. There is also provided a novel dynamic focus control in which dynamic focus coils are connected in series with the deflection yokes so that the change in focus is proportional to the extent of the deflection.



3,622,837

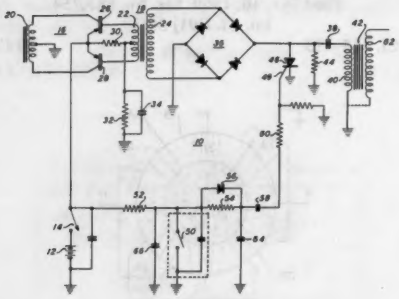
TRANSISTORIZED CAPACITOR-DISCHARGE SYSTEM

Murray Gellman, 1268 East Twelfth St., Brooklyn, N.Y.

Filed June 7, 1965, Ser. No. 461,743

Int. Cl. H05b *37/02*

U.S. Cl. 315—209 T **3 Claims**



A controlled capacitor-discharge system utilizing a multivibrator source, a full-wave rectifier interposed between the multivibrator and a storage capacitor which is connected directly to the ignition coil. A silicon-controlled rectifier is operative to short the diode bridge and the storage capacitor to send a high-voltage stored energy pulse to the ignition coil and to simultaneously cut off the multivibrator power supply. The silicon-controlled rectifier is controlled in its operation by the points of the distributor on the internal combustion engine so that when the silicon-controlled rectifier is again cut off, the multivibrator will resume oscillation and the capacitor will again store energy.

3,622,838

PULSED ELECTRIC SYSTEM FOR OPERATING A GAS DISCHARGE LAMP

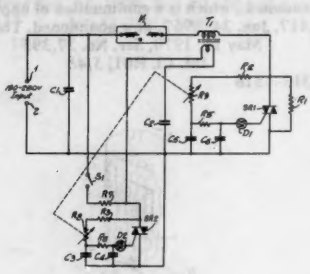
Maksymilian A. Michalski, Woodside, N.Y., assignor to Berkey Photo, Inc., New York, N.Y.

Filed Apr. 21, 1969, Ser. No. 817,912

Int. Cl. H05b *37/00, 39/04*

U.S. Cl. 315—241 **6 Claims**

A continually pulsing electric system for operating a gas discharge lamp directly from an alternating current source is shown in which a gas discharge lamp is connected in series with solid state switching means directly across the terminals of an alternating current supply. Control means for the solid state switching means is included as is starting means for initially igniting the gas discharge lamp. Curves are included showing the increased efficiency under pulsed operation.



3,622,839

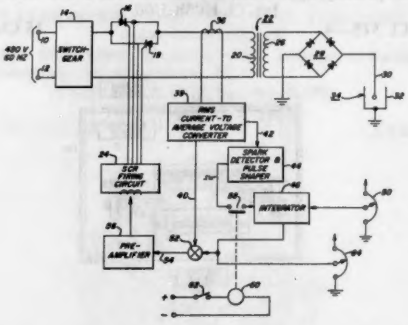
CONTROL SYSTEM FOR ELECTROSTATIC PRECIPITATOR POWER SUPPLY

Harry J. Abrams, Pittsburgh; Ronald C. Blackmond, Allison Park, and Roland W. Roberts, Pittsburgh, all of Pa., assignors to Robicon Corporation, Plum Industrial Park, Pittsburgh, Pa.

Filed Jan. 19, 1970, Ser. No. 4,004

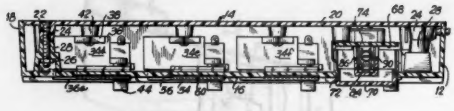
Int. Cl. B03c *3/68;* **G05f** *1/40;* **H02m** *7/20*

U.S. Cl. 317—3 **6 Claims**



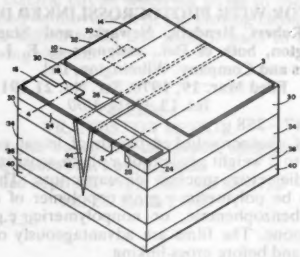
A sparking rate control system for electrostatic precipitators and the like wherein current supplied through a transformer to a rectifier connected to the precipitator is compared with a reference signal to produce an error signal for regulating the current supplied to the precipitator. In the automatic sparking rate control mode, the reference signal is integrated such that the precipitator voltage more or less gradually increases until a spark occurs. Circuitry is provided for sensing the spark and for converting it into a pulse which is combined in opposite polarity relationship with the reference signal fed to the integrator. This reduces the output of the integrator as well as the current supplied to the precipitator; whereupon the integrating action again increases the current until the next successive spark when the current is again reduced. The effect is to regulate the precipitator current and voltage near the value which provides a sparking rate set for optimum precipitator efficiency.

3,622,840
MULTIPLE OUTLET STRUCTURE
Robert D. Kahn, Rockville Centre, Long Island, N.Y., assignor to Fedtro, Inc., Rockville Centre, N.Y.
Filed Feb. 24, 1970, Ser. No. 13,441
Int. Cl. H02b 1/04, 11/18
U.S. Cl. 317—114 1 Claim



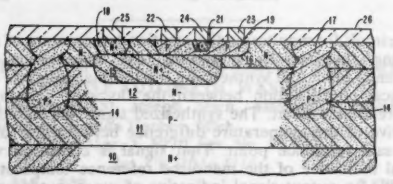
An electrical outlet control unit comprising a plurality of individual electric outlets, each of said outlets including its own switch and indicating lamp, the outlets being wired in parallel via a master switch and fuse to a source of power. The individual electric outlets are characterized by being self-contained assemblies which are mounted within the outlet control unit housing to resist shock.

3,622,841
TRIAC HAVING INCREASED COMMUTATING SPEED
Demir S. Zoroglu, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.
Filed Apr. 16, 1970, Ser. No. 29,000
Int. Cl. H01l 9/12
U.S. Cl. 317—235 AA 8 Claims



A triac is provided having two portions of several layers thereof including particularly the main layer insulated from each other, whereby when the voltage applied to the main electrodes of the triac reverses, the charge stored in a portion of the main layer of the triac during current flow in one direction thereof cannot flow into the other portion of the main layer. This insulation therefore increases the highest commutating speed of the resultant triac over that of known triacs.

3,622,842
SEMICONDUCTOR DEVICE HAVING HIGH-SWITCHING SPEED AND METHOD OF MAKING
Avtar S. Oberai, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,428
Int. Cl. H01l 19/00
U.S. Cl. 317—235 R 13 Claims

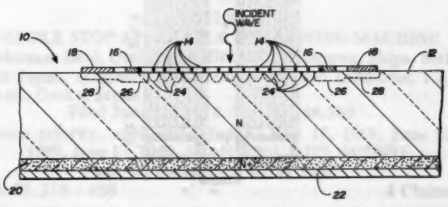


A transistor of a monolithic integrated circuit has its switching speed increased by reducing the parasitic collector capacitance through reducing the junction area between the base and the subcollector. By controlling the thickness and impurity concentration of a layer into which the subcollector region is diffused to prevent punch through of the base to the substrate of the same conductivity as the base or a layer, which is on the substrate, of the same conductivity as the base and beneath the controlled layer, the subcollector region need be positioned only beneath the emitter region and not the entire area of the base region.

3,622,843
ALUMINUM ELECTRODE ELECTROLYTIC CAPACITOR CONSTRUCTION
David A. Vermilyea, Schenectady, N.Y.; Donald R. Ochar, Columbia, S.C., and Willem Vedder, Albany, N.Y., assignors to General Electric Company
Filed Dec. 3, 1969, Ser. No. 881,853
Int. Cl. H01g 9/02
U.S. Cl. 317—230 12 Claims

Both the passivation of aluminum foil particularly for use as electrodes in wet electrolytic capacitors and the inhibition of the aluminum-water reaction within the completed capacitor are described. Pretreatment of etched aluminum foil includes the combined steps of immersion in a boiling aqueous solution containing CrO_3 and H_3PO_4 followed by a 3-minute immersion in a boiling solution of controlled pH containing $H_2PO_4^-$, $SiO_3^=$ and CrO_3. Inhibition of aluminum in a wet electrolytic capacitor is afforded by the addition of a concentration of at least one of the following inhibiting ions to the liquid electrolyte: phosphate, phosphite, periodate, arsenate, tungstate, silicate, vandadate, tellurate, tellurite, antimonate, arsenite, selenate, sulfite and germanate.

3,622,844
AVALANCHE PHOTODIODE UTILIZING SCHOTTKY-BARRIER CONFIGURATIONS
Anthony E. Barelli, and Wallace N. Shaunfield, Jr., both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Filed Aug. 18, 1969, Ser. No. 850,875
Int. Cl. H01l 9/00, 15/00, 5/02
U.S. Cl. 317—234 6 Claims



An avalanche Schottky-barrier photodiode includes a symmetrical metallic grid network deposited over a semiconductor substrate and surrounded by one or more metallic guard rings. When a sufficiently high voltage bias is supplied to the

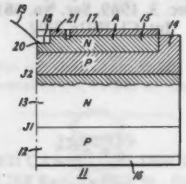
metallic grid network, carriers generated by light impinging upon the semiconductor substrate through the grid network are multiplied by the avalanche gain operation of the photodiode.

3,622,845

SCR WITH AMPLIFIED EMITTER GATE

James E. McIntyre, Crum Lynne; Dante E. Piccone, Philadelphia, and Istvan Somos, Landsdowne, all of Pa., assignors to General Electric Company

Filed May 1, 1969, Ser. No. 820,959
Int. Cl. H01l *11/10, 15/06*
U.S. Cl. 317—235 R **6 Claims**



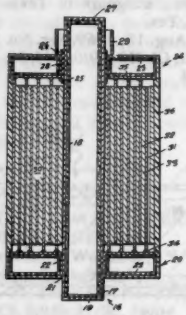
This thyristor utilizes the emitter gate heretofore described and claimed in our copending U.S. Pat. application Ser. No. 602,837, filed Dec. 19, 1966, and assigned to the assignee of the present invention (now Pat. No. 3,489,962). According to that disclosure, part of an electrode-less auxiliary region in one end layer (the emitter) of A PNPN semiconductor body is exposed to suitable triggering means for turning on the device According to the present improvement, an island of electroconductive material remote from the cathode and separate from the triggering means is disposed on another part of the auxiliary region between said exposed part and a laterally adjacent main region of the emitter, and the other part is connected to the main region in a manner to ensure a high turn-on *di/dt* capability when the referenced device is triggered by a "soft" gate drive.

3,622,846

CAPACITOR ENERGY STORAGE IMPROVEMENT BY MEANS OF HEAT PIPE

Eberhart Reimers, 7700 Random Run L. #201, Falls Church, Va.

Filed Nov. 2, 1970, Ser. No. 85,934
Int. Cl. H01g *1/11*
U.S. Cl. 317—245 **8 Claims**



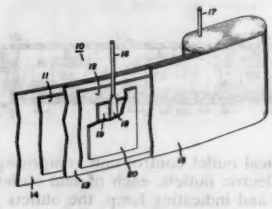
The invention is a heat pipe coolable capacitor in which the heat generated therein and manifested in both radial and axial flow is removed by a novel arrangement of heat pipes.

3,622,847

FLAG TAP RETENTION MEANS IN CAPACITORS,

Frederick W. Grahame, Glens Falls, N.Y. assignor to General Electric Company

Filed Nov. 10, 1969, Ser. No. 875,224
Int. Cl. H01g *1/11*
U.S. Cl. 317—247 **3 Claims**



In a roll-type capacitor where a lead passes continuously from the roll and through a bushing seal in a casing, the flag tap lead is retained between a paper strip and an electrode strip in the roll by means of a section of yieldable or conforming material which covers the flag tap. During high-temperature impregnation of the capacitor the yieldable strip section conforms to or flows into the irregularities of the adjacent surfaces of the flag tap and the dielectric paper so that frictional retention of the flag tap in the roll is significantly increased.

3,622,848

CAPACITOR WITH PHOTOCROSSLINKED DIELECTRIC

William Robert Hendrix, Newark, and Stanley Tocker, Wilmington, both of Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 19, 1970, Ser. No. 21,191
Int. Cl. H01g *3/00*
U.S. Cl. 317—258 **6 Claims**

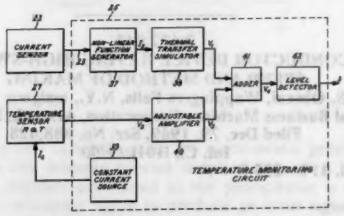
Films of photocrosslinked blends of linear polypropylene with 0.02 to 2 weight percent of a photo-sensitizing agent are used as dielectric spacers for capacitors. The sensitizing agent can be polymeric, e.g., a copolymer of ethylene and acryloxy benzophenone, or nonpolymeric, e.g., 2-methylanthraquinone. The films are advantageously oriented after extrusion and before cross-linking.

3,622,849

THYRISTOR JUNCTION TEMPERATURE MONITOR

Fred W. Kelley, Jr., Media, and Floyd L. Steen, Lansdowne, both of Pa., assignors to General Electric Company

Filed June 23, 1970, Ser. No. 49,092
Int. Cl. H02h *5/04, 7/14*
U.S. Cl. 317—33 SC **10 Claims**



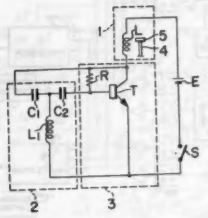
A circuit for monitoring the junction temperature of a conducting thyristor by measuring the temperature of a reference point and synthesizing the thermal response of the physical configuration between the thyristor junction and that reference point. The synthesized signal generated is indicative of the temperature difference between the junction and said reference point. That signal is combined with a signal indicative of the measured reference temperature to provide an output signal indicative of junction temperature per se. The output signal may be utilized to stop conduction in the thyristor when the monitored temperature exceeds a predetermined level.

3,622,850

ELECTROMAGNETIC DRIVING DEVICE

Shinji Nunokawa, 8-6, Hanamigawa, Chiba; Norio Tabuchi, 5-415, Makuhari-cho, Chiba, and Tatsuo Shimada, 2-106, Todoroki, Tamagawa, Setagaya-ken, Tokyo, all of Japan

Filed Oct. 22, 1969, Ser. No. 868,422
Claims priority, application Japan, Oct. 24, 1968, 43/77109
Int. Cl. H02k *33/10*
U.S. Cl. 318—128 9 Claims



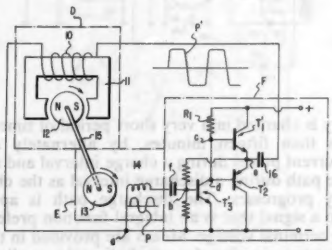
A constant frequency electromagnetic driving device, for example for a time piece, comprises an electromechanical transducer having a coil electromagnetically coupled to a movable mechanical element and serving both pickup and driving functions to convert mechanical movement of the movable element into an electrical signal and also to convert an electrical signal into mechanical movement of the moving element. An electric circuit shifts the phase of the electrical signal generated by movement of the moving element, amplifies the phase-shifted signal and feeds it back to the coil to drive the moving element.

3,622,851

TRANSISTOR MOTOR

Toshihide Hanada, Yokohama-shi, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sept. 22, 1969, Ser. No. 859,722
Int. Cl. H02k *29/00*
U.S. Cl. 318—138 2 Claims



A single-ended, transistorized push/pull circuit amplifies the output of a generator mechanically interlocked to the transistorized motor rotor and is connected across the drive winding of the motor for driving the same.

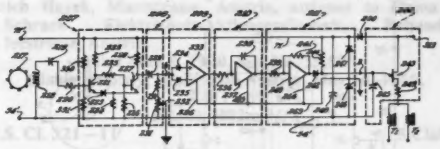
3,622,852

ELECTRONIC SPEED CONTROL CIRCUIT FOR DIRECT DRIVE AUTOMATIC WASHER

George H. Myers, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Mar. 3, 1970, Ser. No. 15,992
Int. Cl. H02p *5/16*
U.S. Cl. 318—328 3 Claims

A motor speed control circuit in which the frequency of the tachometer feedback pulses is doubled, integrated and applied to control the charging circuit of the firing angle control circuit for varying the frequency of energizing pulses applied to the motor.

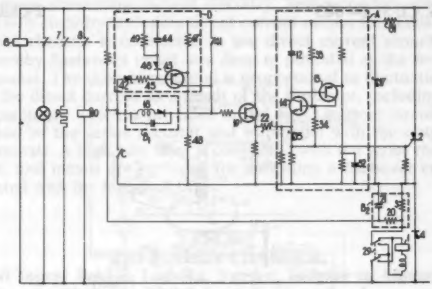


3,622,853

CONTROL CIRCUITS FOR CLOTHES WASHING AND SPIN-DRYING MACHINES

Martin Harold Eastall, Peterborough, England, assignor to British Domestic Appliances Limited, Peterborough, England

Filed Sept. 29, 1969, Ser. No. 861,716
Claims priority, application Great Britain, Sept. 30, 1968, 46,325/68
Int. Cl. H02p *5/16*
U.S. Cl. 318—341 8 Claims



A control circuit for clothes washing and spin-drying machines incorporating a pulse-producing circuit for generating a series of electric current pulses arranged to be applied to the gate of a thyristor for controlling the power supplied to the drive motor through the thyristor, and speed control means for regulating the pulsed output to give a relatively low-motor speed for washing and a relatively higher motor speed for spin drying, together with switch means operable to control the pulse-producing circuit directly to reduce the conduction angle of the thyristor and hence the power supplied to the motor, for example to zero, and so that the return of the switch means to initial condition causes the motor to be first energized in the low-speed condition, irrespective of the condition of the speedcontrol means, so that restarting the motor at full power is avoided.

3,622,854

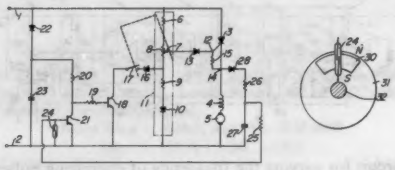
NEEDLE STOP APPARATUS FOR SEWING MACHINE

Toshimasa Imai, Osaka, and Hidenobu Hasegawa, Shiga, both of Japan, assignors to Matsushita Electric Industrial, Co., Ltd., Osaka, Japan

Filed June 15, 1970, Ser. No. 46,205
Claims priority, application Japan, June 17, 1969, June 17, 1969, June 17, 1969; 44/49104, 44/49105, 44/59093
Int. Cl. H02p *3/08*; G05d *3/00*
U.S. Cl. 318—468 4 Claims

A needle stop apparatus for use in a motor-driven sewing machine, in which the needle of the sewing machine is automatically stopped at a predetermined position by turning off a controlled rectifier connected in series with the motor, said turn off of the controlled rectifier being effected by short-cir-

cuiting a gate trigger signal generator upon detecting that the needle is coming to the predetermined position when the motor is prepared to be stopped, and any manual movement



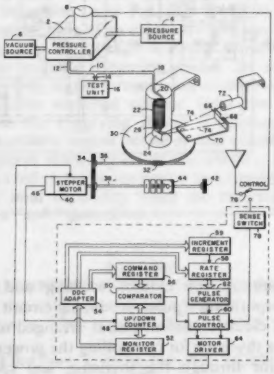
of the needle does not cause the motor to start after a predetermined time interval has elapsed from the motor stop, and further it is possible to operate the sewing machine in a one-stitch mode.

3,622,855

DIGITAL CONTROL DEVICE

David M. Hodgin, Cedar Rapids; Leonard J. Petska, Cedar Rapids; Ferman L. Walker, Cedar Rapids, and Robert H. Pool, Marion, all of Iowa, assignors to Collins Radio Company, Cedar Rapids, Iowa

Filed Aug. 3, 1970, Ser. No. 60,470
Int. Cl. G05b *19/28*
U.S. Cl. 318—603 **2 Claims**



This invention relates to control means for accurately controlling the amount and rate of change of a device to be controlled. The invention contemplates a digital input device which receives a digital command, either manually or from a computer; compares the command with a signal from a position sensing mechanism; and generates an "error" signal which is applied to correctly position the controlled device.

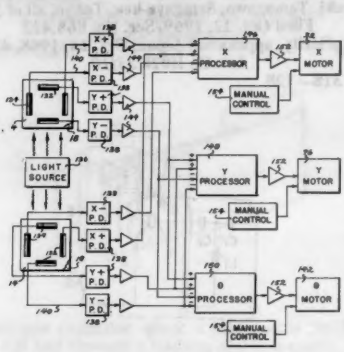
3,622,856

AUTOMATIC PLANAR PHOTOELECTRIC REGISTRATION ASSEMBLY AND SERVO DRIVING APPARATUS THEREFOR

Gordon Willis, Cambridge, Mass., assignor to Computervision Corporation, Waltham, Mass.

Filed Aug. 18, 1969, Ser. No. 850,785
Int. Cl. G05b *1/06*
U.S. Cl. 318—640 **4 Claims**

A device for registering a movable object with another object by moving the movable object through a plane has means for generating X and Y off-register signals which are coupled to X and Y step motors. The step motors are in turn coupled to X and Y lead shafts, each shaft being parallel to a common plane and having a reciprocative element mounted thereon for linear movement in response to rotation of the respective lead shaft. A floating plate is pivotally connected to the two reciprocative elements by two linkage means for movement in a plane parallel to the lead shafts. A mechanical linkage interconnects the floating plate and the movable object to translate the floating plate motion to the movable object to accomplish registration.

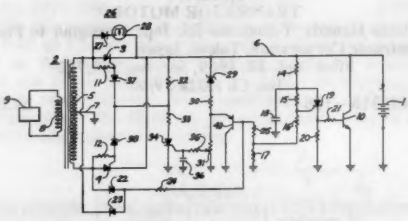


3,622,857

CONTROL CIRCUITRY FOR TERMINATION OF RAPID BATTERY CHARGING

Indar K. Sethi, Inglewood, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Jan. 30, 1970, Ser. No. 7,014
Int. Cl. H02j *7/10*
U.S. Cl. 320—14 **6 Claims**



A battery is charged in a very short period of time, for example less than fifteen minutes, by alternately applying charging current pulses during a charge interval and applying a discharge path during a discharge interval as the charge on the battery progresses. The discharge path is applied in response to a signal that is an integral function preferably of the battery terminal voltage. Means are provided in the rapid battery charging circuitry for precluding the application of the discharge path while charge current pulses are being applied to the battery. The rapid charging of the battery is terminated with the possibility of the application of a trickle charge thereafter by circuitry that is responsive to a predetermined battery terminal voltage. The rapid battery charging circuitry also includes means for making the rapid charge terminating circuitry sensitive only to the battery terminal voltage while there are no charge current pulses being applied to the battery.

3,622,858

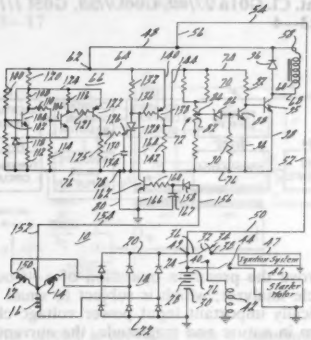
ELECTRICAL GENERATING SYSTEM FOR AN AUTOMOTIVE VEHICLE

Clair Emerson Mitchell, Detroit, Mich.

Filed Oct. 29, 1970, Ser. No. 85,185
Int. Cl. H02j *7/14*
U.S. Cl. 320—64 **18 Claims**

An electrical generating system for use on an automotive vehicle in which the output of an electrical generator,

preferably in the form of an alternator, is controlled by a voltage regulator or limiter, preferably of the solid state type. The control or field winding of the alternator is energized through the voltage regulator, which includes a normally open switch, preferably of the solid state type, connected to be energized from the storage battery of the vehicle and the



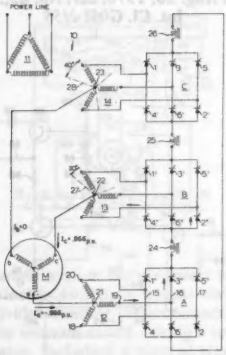
output windings of the alternator through a rectifier. Means are employed responsive to the drop in the terminal voltage of the storage battery when the starter motor of the vehicle is energized to switch the normally open switch into a conducting or closed state thereby permitting the field winding or control winding of the alternator to be energized from the storage battery and the rectifier.

3,622,859

RECTIFIER FREQUENCY CONVERTERS

Dennis F. Williamson, Media, Pa., assignor to Canadian General Electric Limited, Toronto, Canada

Filed Jan. 13, 1970, Ser. No. 2,521
Int. Cl. H02m *5/30*
U.S. Cl. 321—7 **6 Claims**



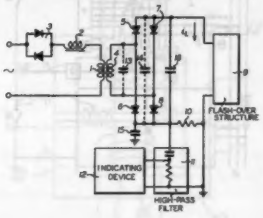
A frequency converter according to this invention comprises a transformer having three wye connected three-phase secondaries connected to a delta configuration of controlled rectifier bridges, and means for firing the rectifiers so as to obtain an adjustable frequency output from the bridges. Each bridge has three parallel legs with at least two rectifiers per leg connected in series anode to cathode. The three output terminals of each transformer secondary are connected to the three legs respectively of a different bridge between the rectifiers, and the adjustable frequency output is taken from the three wye points of the transformer secondaries. This places the impedances of the transformer secondaries between the rectifiers and the load.

3,622,860

APPARATUS FOR THE DETECTION AND INDICATION OF FLASH-OVER IN A RECTIFIER DEVICE

Erich Hayek, Marzstrasse, Austria, assignor to Firma E. Schrack Elektrizitats-Aktiengesellschaft, Pottendorferstrasse, Austria

Filed May 8, 1970, Ser. No. 35,805
Claims priority, application Austria, May 16, 1969, A4711/69
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **5 Claims**



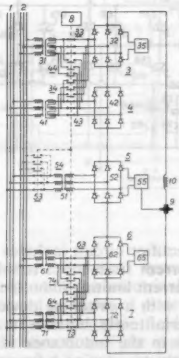
An apparatus for the detection and indication of flashovers at the output side of a rectifier, in particular for electrostatic high-voltage filters, which comprises a rectifier transformer, primary alternating current circuitry, and secondary direct current circuitry including direct current output terminals. A series rheostat is connected in the direct current circuitry, whereby flashovers result in a drop in potential at the series rheostat. The drop in potential is proportional to fluctuations of the direct current as a result of the flashover, including a capacitance which is provided in the direct current circuitry ahead of the series rheostat and in parallel with the output terminals. A high pass filter is connected with the series rheostat, and means are provided for indicating a flashover connected with the high pass filter.

3,622,861

FREQUENCY CHANGER

Carl Ingvar Boksjo, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vesteras, Sweden

Filed Oct. 14, 1970, Ser. No. 80,565
Claims priority, application Sweden, Nov. 12, 1969, 15487/69
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **5 Claims**

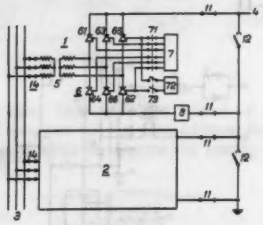


In combination with two AC networks, there is at least one converter connected to one of the networks which is composed of diodes and at least one other converter composed of controlled rectifiers. A further converter composed of controlled rectifiers is connected to one of the networks. All the converters are connected in series in one or several DC circuits. The further rectifier is controlled by the current in the DC circuit in such a way as to compensate for variations in the direct current therein. It is possible to connect the converters alternatively to either of the AC circuits.

3,622,862
BY-PASS CONNECTION OF STATIC CONVERTERS

Carl Ingvar Boksjo, Ludvika, Sweden, assignor to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Oct. 22, 1970, Ser. No. 82,956
Int. Cl. H02m 1/18
U.S. Cl. 321—11 7 Claims

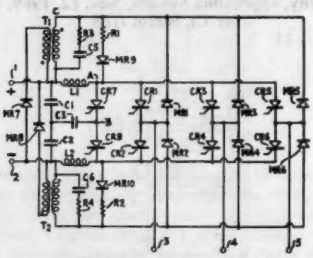


A static converter composed of a converter-transformer and a rectifier bridge connected thereto has a bypass member connected in parallel with the bridge. Two series-connected rectifiers in one phase of the bridge constitute a bypass path. A direct voltage source can be connected with said two bypass rectifiers, the source having such a polarity as to furnish a current in the conducting direction of the two rectifiers.

3,622,863
CONTROLLABLE RECTIFIER CIRCUITS WITH ENERGY RECOVERY NETWORKS

Kenneth G. King, London, England, assignor to Westinghouse Brake and Signal Company, Limited, London, England

Filed Apr. 22, 1970, Ser. No. 30,864
Claims priority, application Great Britain, May 29, 1969, 27379/69
Int. Cl. H02m 7/52
U.S. Cl. 321—45 ER 7 Claims

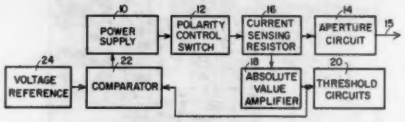


A controllable rectifier circuit includes SCRs for intermittently supplying current from input terminals to output terminals through a current limiting inductance. A commutating capacitor provided with a switching device connected in series therewith intermittently initiates a turnoff process in which current flow in the inductance is diverted from the SCRs to permit them to acquire a forward blocking condition. A unidirectionally conductive reactive current path connected between the input and output terminals enables return of reactive energy in a load to the input terminals and a saturable transformer, having a first winding connected in a path across the inductance and a second winding coupled through a diode to the input terminals, is arranged to undergo a similar voltage time integral to that which the inductance undergoes during the turnoff process and thereby enables a return of surplus energy acquired by the inductance to the input terminals during the resetting thereof towards saturation.

3,622,864
METHOD AND CIRCUITRY FOR GENERATING AND HOLDING PROPORTIONAL AGAINST INPUT POWER VARIATIONS A CURRENT AND A RESULTING VOLTAGE FOR PARTICLE ANALYZER

William A. Claps, and David R. Figueroa, both of Hialeah, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed July 9, 1969, Ser. No. 840,207
Int. Cl. G01n 27/00; G06f 7/38; G05f 1/10
U.S. Cl. 323—4 16 Claims

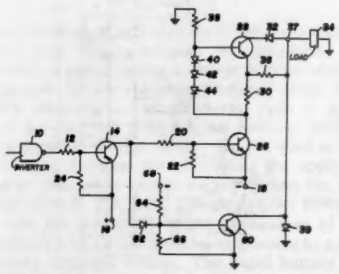


To improve the precision operation of a "Coulter Counter" particle analyzer, which is subject to small magnitude, yet statistically important input power voltage changes that are random in nature and magnitude, the current applied to the microscopic sensing aperture and the voltage applied to the threshold circuits, which monitor and respond to the amplitudes of the particle signals derived from the sensing aperture, are caused to track one another; so that variations of input power do not adversely affect the precision output of the particle analyzer. In series with both the sensing aperture circuit and the threshold circuits is the power supply, a polarity control switch and a current sensing resistor. Interposed between the current sensing resistor and the threshold circuits is an absolute value amplifier, which applies to the threshold circuits a voltage proportional to the aperture current. Additionally, the output from the absolute value amplifier is compared with an arbitrary voltage reference, and the result of the comparison is employed to determine both the aperture current and the threshold voltage.

3,622,865
CURRENT LIMITING SWITCHING CIRCUIT

Ernest O. Lee, Jr., Fairport, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Aug. 20, 1970, Ser. No. 65,514
Int. Cl. G05f 1/58
U.S. Cl. 323—4 10 Claims



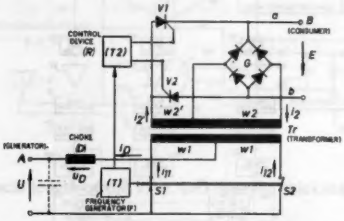
First and second transistors are connected in a series circuit with a load circuit. Switching signals are applied to the first transistor to render both transistors conductive simultaneously. A constant bias potential is applied to the second transistor so that said transistor is switched into saturation for a normal range of current. A resistor is connected in the series circuit between the transistors so that in the event of overload conditions the current flow through the resistor overcomes the constant bias and the circuit functions as a constant current source. A third transistor can be connected to apply ground to the load circuit when the first and second transistors are cut off to provide battery-to-ground signalling.

3,622,866

DIRECT CURRENT CONVERTER WITH A VARIABLE TRANSFORMATION RATIO

Andreas Boehringer, Friedrichshafen, Germany, assignor to Dornier System GmbH, Friedrichshafen, Germany

Filed Sept. 24, 1969, Ser. No. 860,576
Claims priority, application Germany, Oct. 22, 1968, P 18 04 430.9
Int. Cl. H02m 3/32
U.S. Cl. 323—17 6 Claims



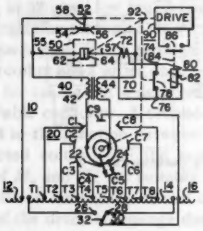
A converter circuit is provided with a transformer with a primary coil to which direct current is applied in one of two opposite directions and a secondary coil which is connected to a supplementary winding. The supplementary winding connects over a rectifier tube to each of the supply lines of the consumer. The tubes are regulated so as to be conductive or nonconductive depending upon the switching over of the primary current flow. This controls the transformation ratio.

3,622,867

LOAD TAP CHANGER SYSTEM INCLUDING PROTECTIVE APPARATUS FOR MONITORING THE OPERATION THEREOF

Thomas B. Topper, and Gilbert D. Throop, both of West Middlesex, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 16, 1970, Ser. No. 29,158
Int. Cl. G05f 1/14
U.S. Cl. 323—43.5 R 8 Claims



A load tap changer system for electrical transformers, including a tap selector switch, a bypass switch, a vacuum switch, and a divider reactor, interconnected to interrupt load current in the vacuum switch during a top change cycle. Protective apparatus, including a current transformer, and a shorting switch connected across the output terminals of the current transformer, prevents operation of the tap selector switch when it would be damaged by interrupting load current.

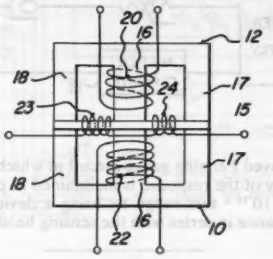
3,622,868

REGULATING POWER TRANSFORMER WITH MAGNETIC SHUNT

Joachim H. Todt, 3903 West 109th Ave., Crown Point, Ind.

Filed Feb. 6, 1970, Ser. No. 9,143
Int. Cl. H02p 13/12; G05f 1/22
U.S. Cl. 323—56 27 Claims

A regulating power transformer consisting of a primary winding and a secondary winding positioned coaxial on the center leg of an E-type stack of magnetic lamination pack which is separated by a layer of I-type laminations having two coils wound thereon, the latter fitting into the windows of the E-type lamination. The I-type laminations provide the function of the magnetic shunt for the flux generated by the primary coil and serve as the magnetic coupling between the E-type laminations on the primary side of the transformer and identical E-type laminations on the secondary side of the transformer. Saturation of the shunt path to various degrees through control of the excitation of the coils mounted on the I-type laminations varies the amount of bypassed or shunted magnetic flux making it available at the secondary coil in a substantially linear proportion to the DC excitation. The transformer uses less iron, is faster in response than conventional regulating transformers and has an improved output wave form.

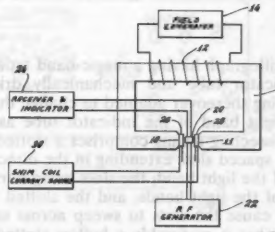


3,622,869

HOMOGENIZING COILS FOR NMR APPARATUS

Marcel J. E. Golay, 116 Ridge Road, Rumson, N.J.

Continuation-in-part of application Ser. No. 649,539, June 28, 1967, now abandoned. This application May 31, 1968, Ser. No. 733,522
Int. Cl. G01n 27/78
U.S. Cl. 324—0.5 R 13 Claims



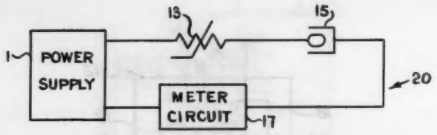
A nuclear magnetic resonance apparatus adapted for homogenizing a field includes electrically insulated electroconductors positioned on pairs of plates and arranged for generating an incremental magnetic field in the vicinity of the sample and in the direction of the main field. The incremental field is represented by spherical harmonic functions. The incremental fields are substantially orthogonal for primary degree n_p and order m_p. Arcuate and radial segments of the electroconductors are positioned on opposite surfaces of a plate with connections through the plate. The arcuate segments are radially spaced from a center thereof in a manner for reducing to a relatively low level, ancillary interferring harmonics which are also generated by the electroconductors. Means are also provided for combining orders of spherical harmonic functions to effect additional correction of interferring ancillary harmonics and to homogenize the field of a spinning sample.

3,622,870

PENNING GAUGE CIRCUIT IMPROVEMENT

Allen R. Hamilton, and Thomas R. Metzger, both of Rochester, N.Y., assignors to The Bendix Corporation

Filed Apr. 24, 1969, Ser. No. 819,072
Int. Cl. G01n 27/00
U.S. Cl. 324—33 1 Claim



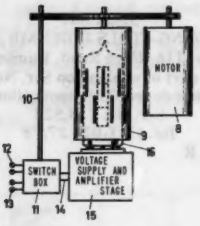
An improved Penning gauge circuit in which the sensitivity and linearity of the response is maintained at pressures in the $10^{-7.5}$ and $10^{-7.5}$ torr range by using a device having nonlinear resistance in series with the sensing head.

3,622,871

OSCILLOGRAPH WITH ELECTRON BEAM TUNING INDICATOR TUBE

Joachim Seidel, Crellestrasse 21, 1 Berlin 62, Germany

Filed Oct. 23, 1969, Ser. No. 868,840
Claims priority, application Germany, Oct. 31, 1968, P 18 06 303.1
Int. Cl. G01r 13/38, 13/36
U.S. Cl. 324—97 10 Claims



In an oscillograph having a magic-band type electric beam tuning indicator tube and mechanically driven dissecting means passing thereover adapted to change the length of the displayed light band of the indicator tube as a function of time, the dissecting means comprises a slotted member having equally spaced slots extending in the direction of change in length of the light band, the slots being narrow relative to the width of the light bands, and the slotted member being adapted to cause the slots to sweep across said width. The slotted member is preferably a hollow slotted cylinder of a size to fit over and rotate about the indicator tube, and the spacing between the slots is preferably at least equal to the width of the light band.

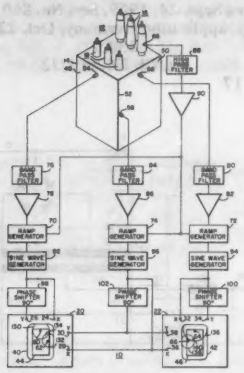
3,622,872

METHODS AND APPARATUS FOR DETECTING AND LOCATING CORONA DISCHARGE IN HIGH-VOLTAGE, FLUID-FILLED ELECTRICAL INDUCTIVE APPARATUS

Virgil L. Boaz, Daleville, Ind., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 16, 1970, Ser. No. 29,165
Int. Cl. G01r 31/06, 31/08, 31/12
U.S. Cl. 324—52 12 Claims

Methods and apparatus for detecting and locating the source of a corona discharge within the casing of fluid-filled electrical apparatus. In one embodiment of the invention, the corona is detected and located by transducers connected to generate circles of increasing radii on the screen of a cathode-ray oscilloscope. In another embodiment of the invention, the corona is detected and located by generating



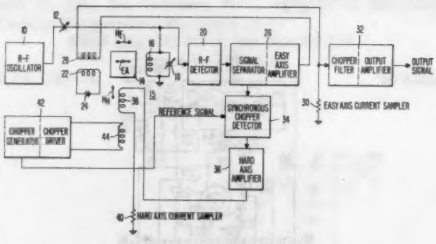
signals having magnitudes responsive to the X, Y, and Z coordinates of the corona source.

3,622,873

THIN MAGNETIC FILM MAGNETOMETER FOR PROVIDING INDEPENDENT RESPONSES FROM TWO ORTHOGONAL AXES

Jonathan E. Stine, Wayne, and Lewis L. Tanguy, Jr., Paoli, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jan. 27, 1970, Ser. No. 6,077
Int. Cl. G01r 33/02
U.S. Cl. 324—43 R 16 Claims



A magnetic feedback technique is described for use with a magnetometer sensor employing a thin magnetic film transducer in an inductance-variation mode to separate and isolate the easy axis and hard axis responses of the transducer, and to provide independent easy axis and/or hard axis output signals from the magnetometer.

3,622,874

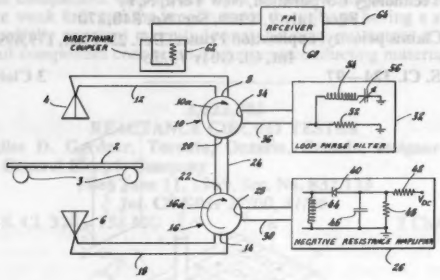
SYSTEM FOR MEASURING THE THICKNESS OF SHEET MATERIAL INCLUDED IN AN RF ENERGY LOOP PATH

Norman E. Chasek, Stamford, Conn., assignor to International Microwave Corporation, Cos Cob, Conn.

Filed Jan. 14, 1970, Ser. No. 2,827
Int. Cl. G01n 27/04
U.S. Cl. 324—58.5 A 19 Claims

Sheet material is passed between microwave antennas connected in a transmission line loop which includes a negative resistance amplifier. RF energy reflected from opposing surfaces of a metal sheet or transmitted through a dielectric

sheet is amplified by the amplifier to produce oscillatory operation. The frequency of oscillation is dependent upon



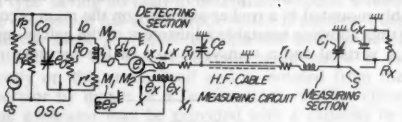
the electrical length of the loop, and thus the thickness of the sheet.

3,622,875

DIELECTRIC CONSTANT-TYPE RESISTANCE-INSENSITIVE DIRECT-READING WATER CONTENT METER

Bunjiro Ichijo, Hamamatsu-shi, Japan, assignor to Kett Electric Laboratory, Tokyo, Japan

Filed Jan. 7, 1970, Ser. No. 1,173
Claims priority, application Japan, Apr. 21, 1969, 44/29454
Int. Cl. G01r *27/26*
U.S. Cl. 324—61 R **1 Claim**



A dielectric constant-type resistance-insensitive direct-reading electrical apparatus for measuring water content wherein a measuring circuit coupled to a coil of a tank circuit in a high-frequency oscillator through a mutual induction coefficient M_e comprises a series connection of a voltage pickup coil, a coil for taking out a detected voltage, a main coil and a first variable capacitor. A second variable capacitor C_r is connected to the junction between the said coil for taking out a detected voltage and the main coil, and the respective values of M_e and C_r are suitably chosen to maintain a particular relation among the circuit constants so that a phase deviation of the detected voltage due to the connection of a test sample in parallel with the said first variable capacitor may be detected through a phase discriminator without the influence of the resistive component of the test sample.

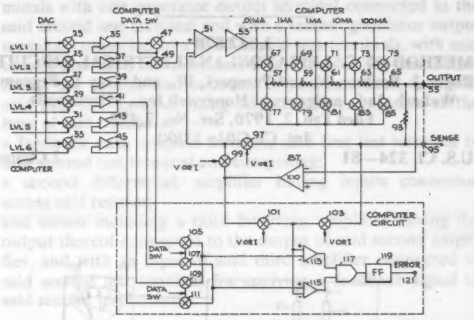
3,622,876

DIGITAL MODULE TESTER SYSTEM

Gary Ross Ure; Donald Lee Degraffenreid, and Robert Allen Savage, all of Orange County, Calif., assignors to Datatron, Inc.

Filed Dec. 14, 1970, Ser. No. 97,775
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 R **7 Claims**

A digital module tester system for dynamically testing multipin digital circuit modules in which a separate programmable pin electronics card is provided for each pin of the module under test. A computer controls a single digital-to-analog converter to continuously update the drive level and monitoring limits of each pin electronics card. Each pin electronics card contains switching circuitry to permit operation in a voltage forcing or current forcing mode. In the voltage forcing mode, a pin driver differential amplifier forces a voltage at the pin under test. A precision resistor in series with the pin driver differential amplifier and the pin under test is monitored for current flow to the pin under test. Comparison



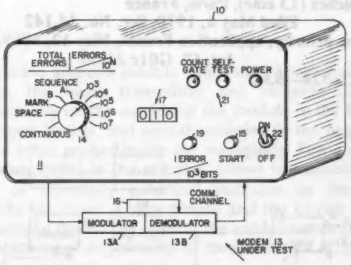
circuitry compares the current flow with limit levels to provide an error indication in the event that the limits are exceeded. In the current forcing mode the pin driver differential amplifier provides a fixed current flow into the pin under test. The voltage at the pin under test is monitored and compared with limit levels to provide an error indication.

3,622,877

APPARATUS FOR TESTING MODULATOR DEMODULATOR UNITS FOR TRANSMISSION ERRORS AND INDICATING THE ERRORS PER POWER OF 10

Kenneth R. MacDavid, Clarence Center; Donald G. Shuda, Clarence Center, and John F. Leaver, Jr., North Tonawanda, all of N.Y., assignors to Sanders Associates Inc., South Nashua, N.H.

Filed Nov. 7, 1969, Ser. No. 874,839
Int. Cl. G01r *15/12*
U.S. Cl. 324—73 R **4 Claims**



Test apparatus for testing and recording either accumulated errors or the probability of error for either synchronous or asynchronous digital data modulator/demodulator units (modems). The modem tester includes a test generator which under the control of a bit rate selector and a sequence mode selector generates a bit test sequence. The bit test sequence is modulated by the modulator portion of a modem under test and is then applied to the demodulator portion of either the same or a different modem under test. The modem tester further includes a reference bit sequence generator and a data synchronization network responsive to the bit test sequence after demodulation for synchronizing the reference bit sequence generator with the test sequence received from the demodulator under test. The received test sequence and the referenced sequence are compared with disagreements of the comparison being accumulated in an error counter. For testing asynchronous modems, a bit synchronization network is provided to maintain the sampling window of the comparator at substantially the middle of a bit period. In order to dis-

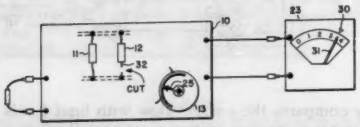
play probability of error, the mode sequence selector is settable to any one of plural total bits indicia expressed as powers of 10 on the display panel. A total bit counter responds to such settings to inhibit further operation of the error counter after a number of bit periods equal to the setting of the selector such that the total errors per power of 10 bits is displayed directly on the display panel.

3,622,878

METHOD OF CALIBRATING AN ELECTRICAL CIRCUIT

Roger J. Feulner, Mount Prospect, Ill., and Troy L. Pegram, Wabash, Ind., assignors to Honeywell Inc., Minneapolis

Filed Feb. 2, 1970, Ser. No. 7,475
Int. Cl. G01r *23/00*
U.S. Cl. 324—81 **2 Claims**



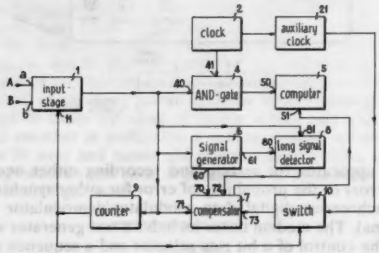
A method or process of calibrating an oscillating circuit having a predetermined frequency or period output signal for a predetermined input signal. The circuit has two capacitors connected in parallel and a variable impedance whereby upon adjustment of the variable impedance to obtain a predetermined frequency output calibration can be selectively accomplished with both capacitors in the circuit or after removing one of the capacitors.

3,622,879

PHASEMETERING SYSTEM INCLUDING NOISE COMPONENT CORRECTING MEANS

Andre Girouy; Paul Zagigaeff; Gerard d'Auzac, and Jean Douzon, all of 75 Paris (Frarce) 51, rue de l'Amiral Mouchez (13 eme), Paris, France

Filed May 4, 1970, Ser. No. 34,142
Claims priority, application France, May 12, 1969, 6915315
Int. Cl. G01r *25/00*
U.S. Cl. 324—83 D **6 Claims**



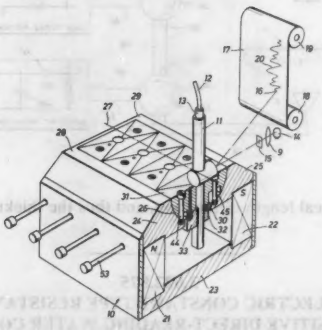
In a digital phasemeter of the type comprising an input stage for generating gating signals having duration P_i proportional to the phase-shift between two signals, and a computer for averaging the n signals P_i obtained in the course of n successive measurement, a correcting circuit is provided for compensating the errors equal in absolute value to T affecting the duration of the gating signals when, because of noise, a small real phase-shift (near zero) has given rise to a long gating signal (near T) or a large phase-shift (near 2π) to a short gating signal (near zero).

3,622,880

SHOCK RESISTANT REMOTELY CONTROLLED GALVANOMETER MOUNT

Pierre C. Escaron, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed July 9, 1969, Ser. No. 840,270
Claims priority, application France, Dec. 23, 1968, 179,899
Int. Cl. G01r *13/38*
U.S. Cl. 324—97 **3 Claims**



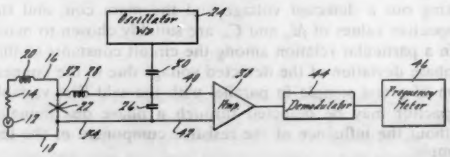
New and improved means for mounting galvanometers in well logging recorders or the like are disclosed which include means, including a support bracket fixed relative to the recorder, a positioning member having a socket for receiving a galvanometer, gear means for rotating the positioning member relative to the bracket to adjust the zero position of the galvanometer, and means for eliminating backlash in the gear means. The entire galvanometer mounting bracket is rotatably mounted in a rocker assembly on the main recorder frame thus allowing rotatable adjustment of the galvanometer about a vertical and a transverse axis of the recorder main frame.

3,622,881

VOLTAGE MEASURING APPARATUS EMPLOYING A JOSEPHSON JUNCTION

Arnold H. Silver, Farmington, Mich., and James E. Zimmerman, Santa Ana, Calif., assignors to Ford Motor Company, Dearborn, Mich.

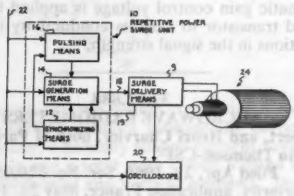
Filed Mar. 21, 1969, Ser. No. 809,320
Int. Cl. G01r *19/26;* **H03c** *1/00*
U.S. Cl. 324—120 **12 Claims**



This disclosure relates to a superconducting circuit means that may be utilized as an ultra-high sensitivity voltmeter or a generator generating a voltage having a substantially constant amplitude. It comprises a superconductive material having a weak link positioned therein with means for applying a voltage of unknown magnitude across the weak link. An oscillator has its output coupled to the weak link so that the output signal of the oscillator generates an oscillating current through it. The voltage of unknown magnitude causes an oscillating current to be generated through the weak link with a frequency proportional to the unknown magnitude of the voltage. The weak link mixes the frequency of the two currents and a demodulating means detects the frequency of the oscillating current produced by the voltage of unknown magnitude. When the circuit means is to be employed as a voltmeter, a frequency meter may be connected to the demodulating means which has a scale readable in voltage

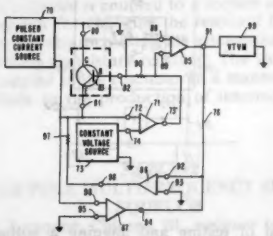
units. If the circuit means is to be employed as a generator of a voltage having a substantially constant amplitude, a standard frequency may be fed to a comparator that also receives the output from the demodulating means. The output from the comparator may be fed back through suitable means to the weak link and the amplitude of the voltage having a substantially constant magnitude may be read out across a circuit component connected to the superconducting material.

3,622,882
REACTANCE CIRCUIT TESTER
Miles D. Gardner, Toronto, Ontario, Canada, assignor to General Electric Company
Filed June 11, 1969, Ser. No. 832,133
Int. Cl. G01r *27/00, 31/06*
U.S. Cl. 324—158 MG **2 Claims**



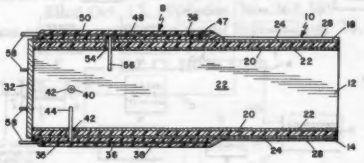
Low-impedance circuits such as the armature windings of DC motors are tested for faults by equipment which delivers to them electric power surges having wave fronts with a rapid rate of change of voltage and current with respect to time, thereby causing a ringing oscillation to occur within these circuits. This ringing oscillation is inspected and compared with the type of oscillation which should occur in a circuit of this type having no fault to determine whether a fault exists. The equipment has a test probe which is physically separable from the surge generator. A capacitor used to develop the oscillation in the electric circuit being tested is mounted directly on the probe itself and is isolated from the surge generator by means of a fast recovery rectifier circuit. The surge generator may be provided with a capacity to deliver high current pulses through low-impedance coaxial couplers to the probe to burn out contaminants which tend to short out windings of the armatures.

3,622,883
PULSED CURRENT TRANSISTOR BETA TESTER HAVING FEEDBACK TO MAINTAIN EMITTER TO COLLECTOR CURRENT CONSTANT
Kenneth E. Haire, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.
Original application Aug. 18, 1965, Ser. No. 538,858, now Patent No. 3,471,770. Divided and this application July 24, 1969, Ser. No. 870,839
Int. Cl. G01r *31/22*
U.S. Cl. 324—158 T **8 Claims**



A test circuit for measuring forward current gain of a transistor comprising:
a plurality of output test terminals for connection to the collector, emitter and base of said transistor;
a first, drive, amplifier having input and output terminal;
a resistor connected in series between the output of said first amplifier and a first of said test terminals;
a first referenced potential connected to a first input of said first amplifier;
a second of said test terminals connected to a second input of said first amplifier;
a constant current generator having at least two output terminals with one generator output terminal connected to the said second test terminal and with a second generator output terminal connected to a third of said test terminals, with said second and third test terminals being adapted for connection across the emitter and collector of said transistor, and with said first test terminal being adapted for connection to the base of said transistor;
a feedback path coupled from the said first test terminal to said second test terminal and comprising:
a second differential, amplifier having inputs connected across said resistor;
and means including a third inverting, amplifier having the output thereof connected to the output of said second amplifier, and with an input of said third amplifier connected to said second test terminal for applying a feedback signal to said second test terminal.

3,622,884
MICROWAVE INTEGRATED TRANSCEIVER AND ANTENNA MODULE
Raymond C. Kent, San Diego, Calif., assignor to Teledyne Ryan Aeronautical Company, San Diego, Calif.
Filed July 15, 1970, Ser. No. 54,909
Int. Cl. H04b *1/58*
U.S. Cl. 325—15 **10 Claims**

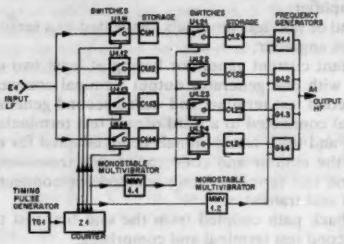


A microwave antenna module comprising a waveguide element with the basic transmitter and receiver circuitry mounted directly on the outside of the module in the form of printed circuit boards, and directly coupled to the respective output and input probes inside the waveguide. Phase control means incorporated in the circuitry allows transmission and reception of circularly polarized radiation in the same module. The structure is very simple and the circuit boards are substantially flat on the sides of the module, thus allowing compact stacking of any number of modules in an array.

3,622,885
SYSTEM FOR THE PARALLEL TRANSMISSION OF SIGNALS
Tadeusz Kruszynski, Oberdorf; Hans Van Der Floe, Selzach; Fritz Eggiman, Oberengstringen, and Ekkehard A. Wildhaber, Windisch, all of Switzerland, assignors to Autophon Aktiengesellschaft, Solothurn, Switzerland
Filed July 22, 1969, Ser. No. 843,594
Claims priority, application Switzerland, July 26, 1968, 11281/68
Int. Cl. H04b *1/66;* **H04l** *3/00*
U.S. Cl. 325—40 **9 Claims**

A system for transmission of continuous signals wherein the signals are sampled into sections, which sections are subsequently assembled into groups. A frequency band is permanently associated with each section dependent upon its position within the group and for each section an alternating-current pulse is produced, the frequency of said alternating-current pulse being within the frequency band associated

with said section and which contains the signal contents of the corresponding section. The alternating-current pulses are



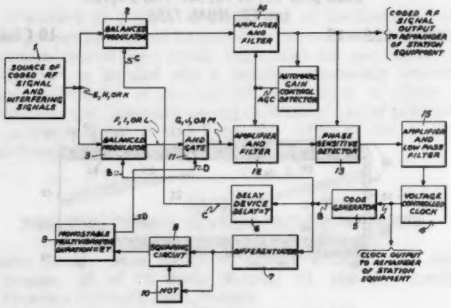
longer than the sections and are temporarily overlapping one another.

3,622,886

SYNCHRONIZATION SYSTEM

Gerald Rabow, Nutley, N.J., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Sept. 25, 1968, Ser. No. 762,453
Int. Cl. H04j *3/06*
U.S. Cl. 325—321 **10 Claims**



In an early-late gate type synchronization system, a code generator driven by a voltage controlled clock produces a predetermined code signal. This signal is employed to generate a delayed version thereof and a gate signal at the transitions of the undelayed code signal. The predetermined code signal is also received from a remote transmitter by a first balanced modulator having a delayed code signal coupled to its other input to recover the received code signal. A second balanced modulator receives the received code signal on one input and the undelayed code signal on its other input. The output of the second modulator is gated by an AND gate enabled by the gate signal. The output signal of the first balanced modulator and the AND gate are coupled to a phase detector to produce a control signal operable on the clock to synchronize the delayed code signal with the received code signal.

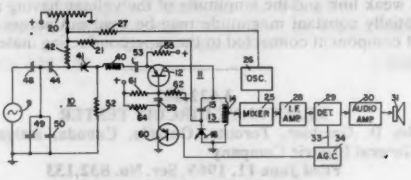
3,622,887

OVERLOAD COMPENSATION CIRCUIT FOR ANTENNA TUNING SYSTEM

Theodore A. Byles, Villa Park, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed May 15, 1969, Ser. No. 825,024
Int. Cl. H04b *1/18*
U.S. Cl. 325—362 **10 Claims**

A radio receiver is supplied with signals from a high impedance capacitive antenna coupled in series with a low impedance resistive load in the form of the emitter-base circuit of a common-base RF transistor amplifier. The coupling circuit is a series tuned circuit having a varactor diode connected in series with an inductor between the antenna and the emitter of the RF transistor amplifier. Overload compensation for the varactor diode is provided by a variable resistor in the form of the collector-emitter path of a second transistor connected between the base of the RF amplifier



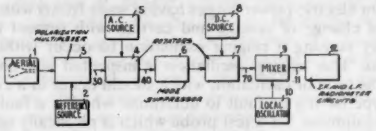
transistor and ground. The base of the RF amplifier transistor is DC isolated from the collector of the second transistor, and automatic gain control voltage is applied to the base of the second transistor to vary its conductivity in accordance with variations in the signal strength.

3,622,888

MICROWAVE RADIOMETERS

Alain Robert, and Henri Charvier, both of Paris, France, assignors to Thomson-CSF

Filed Apr. 29, 1969, Ser. No. 820,055
Claims priority, application France, May 31, 1968, 153505
Int. Cl. H04b *1/100*
U.S. Cl. 325—363 **3 Claims**



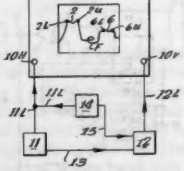
An improvement in hetrodyne-type microwave radiometers, comprising a polarization changer for passing, with crossed polarizations, the signals respectively coming from a radio source and a reference source, a first rotator, such as of the Faraday type, operated at low frequency, an mode suppressor and a mixer connected to a local oscillator, wherein a second rotator, such as of the Faraday type producing a constant rotation in the polarization, is arranged between the mode suppressor and said mixer.

3,622,889

BANDPASS RESPONSE DISPLAY

Italo Ridolfi, River Grove, Ill., assignor to Standard Kollsman Industries, Inc., Melrose Park, Ill.

Filed Aug. 29, 1969, Ser. No. 854,100
Int. Cl. H04b *1/00*
U.S. Cl. 325—363 **9 Claims**



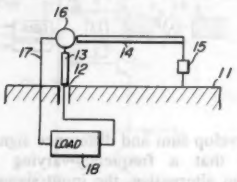
A method of testing and aligning a voltage controlled tuner provides a simultaneous display of the low and high-channel frequency response to facilitate setting of the adjustable tuning reactances. A function generator provides different tuning voltage levels in synchronism with a variable frequency signal from a sweep generator to create the tuner output signals representative of the low and high-channel responses.

3,622,890

FOLDED INTEGRATED ANTENNA AND AMPLIFIER

Kyohei Fujimoto, and Yoshiyasu Hiroi, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka Japan

Filed Jan. 24, 1969, Ser. No. 793,709
Claims priority, application Japan, Jan. 31, 1968, Feb. 15, 1968, Feb. 15, 1968, Feb. 15, 1968, Nov. 18, 1968, Nov. 18, 1968, Nov. 18, 1968; 43/6321, 43/10011, 43/10012, 43/10013, 43/85085, 43/101235, 43/101236
Int. Cl. H01q 1/26
U.S. Cl. 325—375 11 Claims



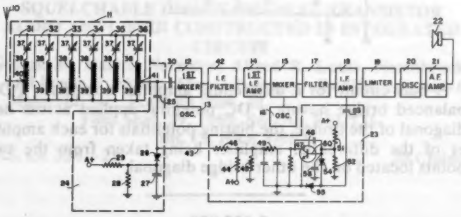
An integrated antenna system comprising a ground plane, at least one vertical element substantially perpendicular to the ground plane, a helically shaped element having horizontal polarization and a solid state circuit located at the junction of the horizontal and vertical elements. The described antenna system facilitates control of the characteristics of the antenna without varying the physical dimensions thereof. Consequently, antenna size may be reduced, related equipment simplified and the overall characteristics of the antenna system improved.

3,622,891

RADIO RECEIVER WITH AUTOMATIC CONTROL OF ATTENUATION FOR REDUCTION OF INTERMODULATION

Wayne H. Leland, Addison, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 28, 1969, Ser. No. 811,399
Int. Cl. H04b 1/18
U.S. Cl. 325—381 9 Claims



An automatic control system for a communications receiver automatically increases the attenuation of a frequency selective stage, preferably near the input of the receiver, when signals above a certain strength are received. A variable reactance device is coupled to a section of a multisection helical resonator for changing the resonant frequency of the section and thereby increasing the attenuation of the resonator when strong signals are received. The variable reactance device is coupled to the resonator in a manner so that it does not contribute to the production of intermodulation in the receiver.

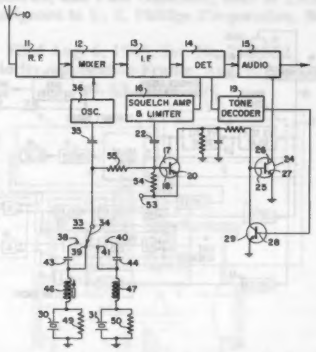
3,622,892

SINGLE POLE MULTIFREQUENCY SELECTIVE SQUELCH

Richard E. Lunquist, Chicago, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Continuation of application Ser. No. 803,317, Feb. 28, 1969. This application Aug. 13, 1970, Ser. No. 63,652
Int. Cl. H04b 1/10
U.S. Cl. 325—456 10 Claims

A single pole multicontact switch is used to selectively connect different crystals to an oscillator to vary the frequency of the oscillator. The crystal circuits include a direct current path and each crystal circuit is coupled to one of a pair of contacts of the switch through a direct current conductive path and to the other of the pair of contacts through a direct current blocking path. A squelch circuit is provided with a bias circuit connected thereto and to the single pole switch. The bias circuit acts to render the squelch circuit selectively operative or inoperative according to the path through which the crystal is connected to the crystal oscillator.

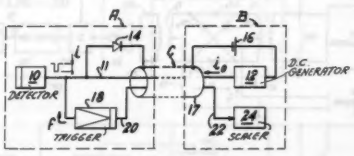


3,622,893

METHOD AND APPARATUS FOR ANALYZING AN AMPLITUDE SPECTRUM

Bernard Dervieux, Chatenay-Malabry; Jean Douzon, Paris, and Andre Girouy, Paris, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Oct. 17, 1968, Ser. No. 768,389
Claims priority, application Great Britain, Aug. 26, 1968, 40719/68
Int. Cl. H03k 5/20
U.S. Cl. 328—115 9 Claims



In method for analyzing the amplitude spectrum of electric pulses, a direct current of predetermined value variable by steps is generated, the amplitude of each pulse is compared with the current, a signal is emitted responsive to each pulse whose amplitude is greater than value of the current and said signals are counted. In a modified embodiment a second direct current is generated and a signal is emitted when the amplitude of a pulse is between the two currents. A device for carrying out the method is also described.

3,622,894

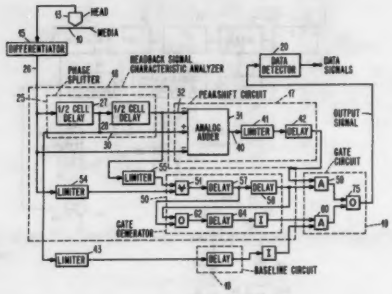
PREDETECTION SIGNAL COMPENSATION

Robert F. Heidecker, and Richard G. Laatt, both of Longmont, Colo. assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1970, Ser. No. 95,784
Int. Cl. H04b 15/00
U.S. Cl. 328—162 17 Claims

A periodic signal has information-bearing signal changes subject to undesired perturbations (such as peak shift) which degrade detection of the information. First and second intermediate signals are generated from the periodic signal. One of the intermediate signals is compensated for such undesired perturbations. Signal characteristics of the periodic signal are analyzed for determining the likelihood of such undesired

perturbations. Based upon the analysis, either the first or second intermediate signal is selected for detection purposes. In a preferred form, the readback signal, delayed by one-half cell period, is used as an uncompensated signal. Signal amplitudes of the periodic signal are compared at points separated by one cell period. If the amplitudes are substantially different, then the peak-shift compensated signal is selected as the output signal. At all other times, the one-half-cell delayed signal is used as the output signal.

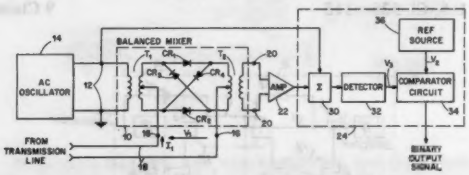


3,622,895

UNIVERSAL DIGITAL LINE RECEIVER EMPLOYING FREQUENCY CONVERSION TO ACHIEVE ISOLATION

Donald Leroy Starkey, North Tonawanda, N.Y., and Robert H. Zinsmeister, Newton, Mass., assignors to GTE Sylvania Incorporated

Filed Feb. 26, 1970, Ser. No. 14,392
Int. Cl. H03k 9/00
U.S. Cl. 329—104 **2 Claims**



A universal digital line receiver employs an oscillator having an output signal, the frequency of which is substantially greater than the binary rate of a digital input signal to the line receiver. A transformer-coupled balanced mixer, to which the digital input signal is directed, has an input connection from the oscillator and is operative in response to the digital input signal to transfer a portion of the oscillator signal to a detector. The detector, which also has an input connection from the oscillator, provides an isolated replica of the input digital signals.

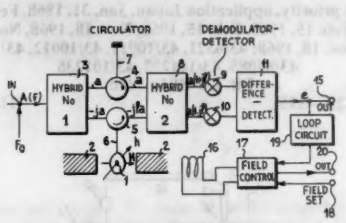
3,622,896

MICROWAVE SIGNAL-PROCESSING CIRCUITS, AND PARTICULARLY MICROWAVE FM DISCRIMINATOR

George Pircher, Paris, France, assignor to Thomson-CSF, Paris, France

Filed May 6, 1970, Ser. No. 35,077
Claims priority, application France, May 14, 1969, 15,711
Int. Cl. H03d 3/00
U.S. Cl. 329—116 **10 Claims**

A first hybrid circuit has a microwave signal applied thereto and has two signal component outputs, 90° out of phase with respect to each other. The hybrid circuit is interconnected to a second hybrid, in the form of a magic Tee, and delivers sum and difference signals of the inputs, which are then applied to a difference detector. The interconnection between the two hybrid circuits includes, in one line a ferromagnetic resonator located in a magnetic field set to the center frequency of the applied input signal to the first hybrid; upon deviation of the frequency of the input signal from the center, with the magnetic field constant, the second hybrid will develop sum and difference signals which can be detected, so that a frequency-varying signal is being analyzed. In an alternative, the input signal is kept at constant frequency and the magnetic field strength is varied, the change in the output signal than being indicative of variation of magnetic field strength.

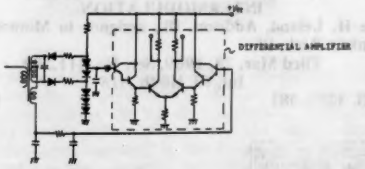


3,622,897

BIAS CIRCUIT FOR A DIFFERENTIAL AMPLIFIER

Masanobu Tsugita, Tokyo, Japan, assignor to Nippon Electric Company Limited, Tokyo, Japan

Filed Dec. 19, 1969, Ser. No. 886,495
Claims priority, application Japan, Dec. 26, 1968, 43/96165
Int. Cl. H03d 3/10
U.S. Cl. 329—129 **1 Claim**



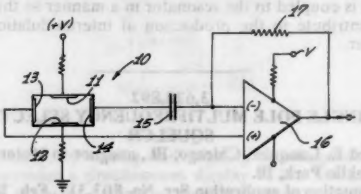
A bias circuit for a differential amplifier comprises a DC balanced bridge having a DC potential applied across one diagonal of the bridge, the biasing potentials for each amplifier of the differential amplifier being taken from the two points located on the other bridge diagonal.

3,622,898

CIRCUIT FOR PROCESSING HALL GENERATOR OUTPUT SIGNALS

Isidore William Salmon, Los Angeles, Calif., assignor to Contelesis Corporation, Maspeth, N.Y.

Filed May 20, 1970, Ser. No. 38,979
Int. Cl. H03f 15/00
U.S. Cl. 330—6 **3 Claims**



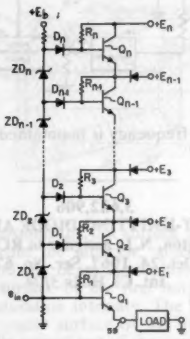
A Hall device is capacitively connected across direct and inverting inputs of a differential-operational amplifier.

3,622,899

HIGH-VOLTAGE POWER AMPLIFIER CIRCUIT

Mark F. Eisenberg, North Plainfield, N.J., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed May 8, 1969, Ser. No. 823,034
Int. Cl. H03f 3/04
U.S. Cl. 330—22 7 Claims



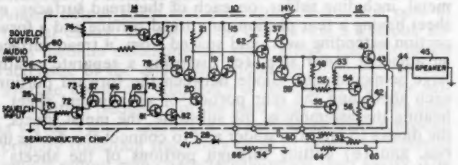
A power amplifier circuit is capable of providing high-frequency output signals over a wide voltage range. At least two transistors are coupled in series to a load terminal and the transistors are energized by respective voltage sources having different magnitudes. The transistors are biased so that they operate as amplifiers in sequence in response to an input signal of increasing magnitude. The overall power dissipation in the circuit is low for a wide range of output signals.

3,622,900

SQUELCHABLE DIRECT COUPLED TRANSISTOR AUDIO AMPLIFIER CONSTRUCTED IN INTEGRATED CIRCUIT

George M. Hanus, Norridge; Alfred R. Lucas, Northbrook, and Frank R. Skutta, Mount Prospect, all of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 29, 1969, Ser. No. 861,721
Int. Cl. H03f 3/68
U.S. Cl. 330—26 20 Claims



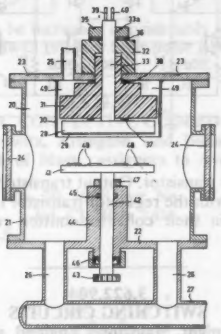
Direct coupled transistorized operational amplifier including differential amplifier input circuit, Darlington connected transistor driver, and high-efficiency output stage. To turn the amplifier on and off, bias potentials are applied to the differential amplifier in a manner to prevent audio transients. A control circuit controls the charging of capacitors to provide the bias potentials. The amplifier is constructed in integrated circuit form with compensation for temperature and frequency characteristics of substrate PNP and ring collector lateral PNP-transistors, and for input to output phase shift through the amplifier.

3,622,901

NEGATIVE-TEMPERATURE-COEFFICIENT RESISTORS IN THE FORM OF THIN LAYERS AND METHOD OF MANUFACTURING THE SAME

Jean Paul Ledran, and Paul Guiochon, both of Evreux-Eure, France, assignors to U. S. Phillips Corporation, New York, N.Y.

Filed Aug. 6, 1968, Ser. No. 750,552
Claims priority, application France, Aug. 9, 1967, 117409
Int. Cl. H01c 7/04
U.S. Cl. 338—25 5 Claims



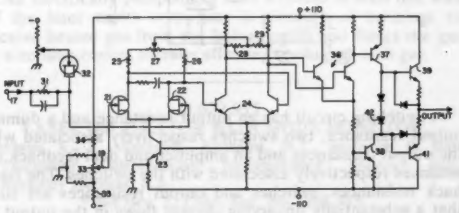
A negative-temperature-coefficient resistor formed by applying a thin semiconductive silicon carbide layer to a substrate.

3,622,902

FET DIFFERENTIAL AMPLIFIER

Thomas Joseph Thomas, Lewisburg, W. Va., assignor to The Bendix Corporation

Filed Nov. 26, 1969, Ser. No. 880,036
Int. Cl. H03f 3/68
U.S. Cl. 330—30 1 Claim



A differential amplifier for use with electrometers. The input stage employs unmatched field effect transistors for high-input impedance. The circuit is arranged for compensation and adjustment to provide satisfactory operation with unmatched transistors.

3,622,903

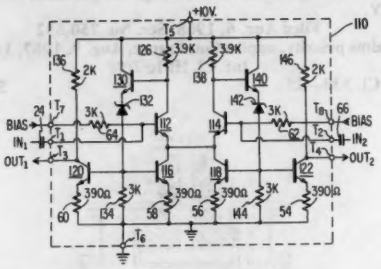
HIGH-GAIN DIFFERENTIAL AMPLIFIER

Steven Alan Steckler, Clark, N.J., assignor to RCA Corporation

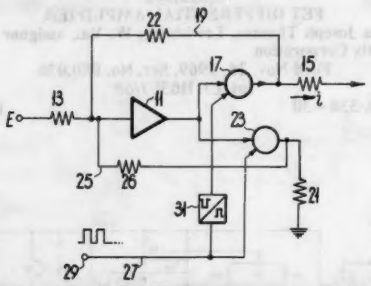
Filed Dec. 29, 1969, Ser. No. 888,391
Int. Cl. H03f 3/68
U.S. Cl. 330—30 15 Claims

A high-gain, linear, differential amplifier which provides output voltage variations substantially equal to the total

supply voltage associated with the amplifier. Each half of the amplifier comprises an input transistor, a shunt regulator transistor and a feedback arrangement between input and regulator transistors to maintain substantially constant current in the input transistor. Output transistors having their inputs in parallel with the regulator transistor inputs and output loads coupled in their collector-emitter current paths are provided.



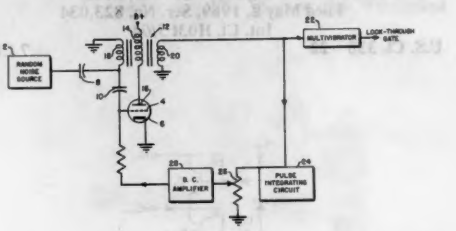
3,622,904
SWITCHING CIRCUITS
Peter Michael Knight, Maidstone, England, assignor to Elliott Brothers (London) Limited, London, England
Filed Nov. 3, 1969, Ser. No. 873,458
Claims priority, application Great Britain, Nov. 4, 1968, 52,196/68
Int. Cl. H03f *1/36*
U.S. Cl. 330—103 **1 Claim**



A switching circuit has an output resistance and a dummy output resistance, two switches respectively associated with the output resistances and an amplifier and dual feedback resistances respectively associated with the switches. The feedback resistances, switches and output resistances are such that a substantially unvarying current flows in the output of the amplifier either to the output or dummy output resistance depending on the switching states of the switches. As a result, the amplifier does not introduce any lag into the operation of the switching circuit.

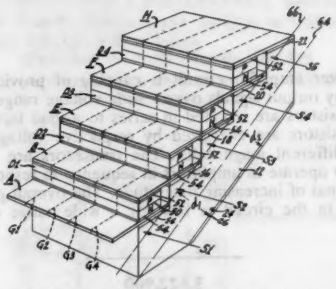
3,622,905
RANDOM PULSE GENERATOR
Paul Merrill Brown, Los Angeles, Calif., assignor to The United States of America as represented by the Secretary of the Army
Filed Sept. 4, 1952, Ser. No. 307,886
Int. Cl. H03k *3/82, 3/16*
U.S. Cl. 331—78 **4 Claims**

1. A random pulse generator comprising a blocking oscillator having an input circuit and output circuit, a random frequency noise source connected to said input circuit for triggering said oscillator, integrating means connected to said output circuit for generating a direct current voltage proportional to the average repetition frequency of the output pulses of said oscillator, and means for coupling said direct current voltage to said input circuit whereby the period of said



average repetition frequency is maintained substantially constant.

3,622,906
LIGHT-EMITTING DIODE ARRAY
Paul Nyul, Flemington, N.J., assignor to RCA Corporation
Filed Oct. 24, 1967, Ser. No. 677,571
Int. Cl. H01s *3/04*
U.S. Cl. 331—94.5 **7 Claims**



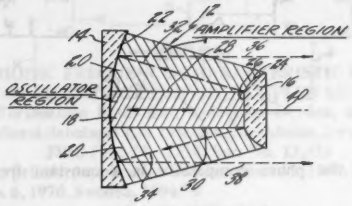
A light-emitting diode array comprises a substrate of insulating material having one side formed with a plurality of steps. A separate row of spaced-apart, similarly oriented diodes is disposed on the tread surface of each of the steps. Corresponding diodes in the different rows are disposed in columns, and the diodes in each of the columns are connected in series.

A method of making the light-emitting diode array comprises the operations of (a) forming a plurality of steps in one side of a substrate of insulating material, (b) disposing a sheet of metal, including solder, on each of the tread surfaces, each sheet having a rear portion on a tread surface and a forward portion extending over, and spaced from, a tread surface of an adjacent lower step, (c) disposing a separate relatively large semiconductor diode between the forward portion of each sheet and the rear portion of an adjacent sheet, (d) heating the assembly of the substrate, the metal sheets, and the diodes to melt the solder and to connect the diodes in series, and (e) cutting through portions of the sheets and diodes to form a plurality of columns of relatively smaller, serially connected diodes.

3,622,907
COMPOSITE OSCILLATOR AMPLIFIER LASER
Richard Giles Tomlinson, Glastonbury, and Boyce Burdick, Vernon, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.
Filed Jan. 27, 1970, Ser. No. 6,090
Int. Cl. H01s *3/05*
U.S. Cl. 331—94.5 **4 Claims**

Two mirrors forming an optical cavity about an axis through their geometric centers are shaped and positioned to allow regions within the cavity where laser oscillation and amplification can occur. The cavity is formed by a relatively

large first mirror having a reflection surface of concave contour and a smaller second mirror having a compound reflection surface of essentially convex contour, the compound mirror having a curved outer reflection surface surrounding a central flat reflection surface. The cavity, filled with a gas of high optical gain, supports electromagnetic energy oscillations between the central surface of the first mirror and the flat surface of the second mirror. A portion of the oscillation



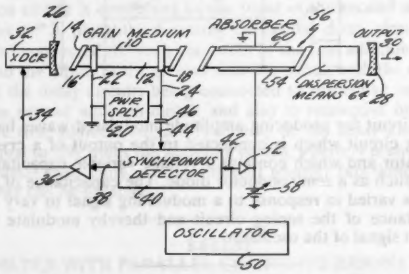
energy spills over around the flat surface of the second mirror, is reflected from the adjacent spherical surface as a beam of energy and the beam is amplified in passing back toward the outer surface of the first mirror through a gas medium of high saturation intensity. The amplified beam is reflected from the outer surface of the first mirror, further amplified and finally passed out of the cavity. A spherical as well as a cylindrical geometric embodiment are disclosed.

3,622,908

DITHERED GAIN CHARACTERISTIC STABILIZATION OF A GAS LASER

Michael L. Skolnick, Monroe, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 20, 1970, Ser. No. 21,262
Int. Cl. H01s *3/00*
U.S. Cl. 331—94.5 **3 Claims**



A frequency stabilized gas laser having a substantially unmodulated output beam includes, within the optical path of the optical cavity, an absorption cell having a gaseous absorption medium exhibiting the stark effect, the absorption characteristic of the cell being shifted in frequency so that the average Lamb dip frequency is coincident with the primary transition frequency of the laser gain medium, the shift being varied a small amount in an oscillatory fashion around the primary transition frequency so as to provide a dithered net optical output gain characteristic to the laser cavity. The resulting relative variation in optical cavity power extraction is used to adjust the position of one mirror, therefore the length of the cavity and the resonant frequency thereof.

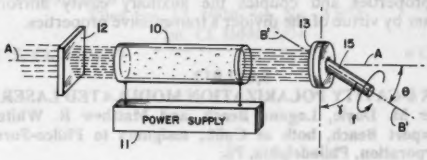
3,622,909

METHOD AND MEANS FOR PROVIDING A HIGH-REPETITION RATE Q-SWITCHED GAS LASER

Brian Hanson Woodcock, St. Albans, England, and Walter Luck Faust, Los Angeles, Calif., assignors to Union Carbide Corporation

Filed Aug. 10, 1970, Ser. No. 62,281
Int. Cl. H01s *3/11*
U.S. Cl. 331—94.5 **4 Claims**

A gas laser is Q-switched by rotating one of the end mirrors about an axis forming an acute angle with the axis of the resonator. By this arrangement, the pulse repetition rate of



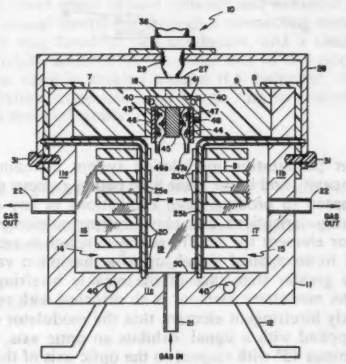
the gas laser may be increased considerably without decreasing the available dwell time for laser pulse generation.

3,622,910

DYNAMIC CONVECTIVE COOLED LASER

Arthur R. Kantrowitz, Arlington, and Donald A. Leonard, Stoneham, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed Nov. 20, 1968, Ser. No. 777,373
Int. Cl. H01s *3/04*
U.S. Cl. 331—94.5 **5 Claims**



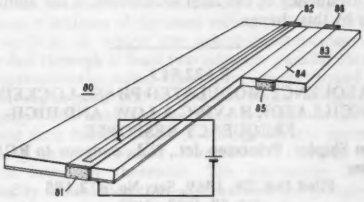
An electrically pumped gas laser wherein at least one wall of the laser cavity comprises a plurality of openings to receive heated gas from the lasing region and direct the gas to a cooling region, thereby effecting cooling of such gas.

3,622,911

LASER OSCILLATOR WITH MODE SELECTOR

Enrique A. J. Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Dec. 2, 1968, Ser. No. 780,395
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **2 Claims**



This application describes a dual cavity, mode selective laser. The two cavities are formed with three mirrors, one of which is common to both the primary cavity, containing the

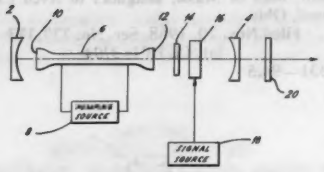
active laser material, and the auxiliary cavity. The common mirror is located such that a power divider, positioned in a region of the laser common to both cavities, coupled the primary cavity mirrors together by virtue of the divider's reflective properties and couples the auxiliary cavity mirrors together by virtue of the divider's transmissive properties.

3,622,912

INTRA-CAVITY POLARIZATION MODULATED LASER

Walter M. Doyle, Laguna Beach, and Matthew B. White, Newport Beach, both of Calif., assignors to Philco-Ford Corporation, Philadelphia, Pa.

Filed May 22, 1969, Ser. No. 826,918
Int. Cl. H01s 3/00
U.S. Cl. 331—94.5 **12 Claims**



A laser polarization modulation system including within the laser cavity and in the laser light path a gaseous discharge tube adapted to produce laser oscillations in any one of a number of polarizations, a weakly birefringent element, and a modulator element the birefringence of which is variable, in response to an applied signal, up to a maximum value substantially greater than that of the weakly birefringent element. The modulator element is so oriented with respect to the weakly birefringent element that the modulator element, when supplied with a signal, exhibits an optic axis, oriented plus or minus 45° with respect to the optic axis of the weakly birefringent element, the sign of the angle of orientation depending on the polarity of the applied signal. The amount of birefringence exhibited by the modulator element depends directly on the value of the signal applied thereto. When no signal is applied to the modulator element, it exhibits no birefringence, and the weakly birefringent element is effective to constrain laser oscillations to a single polarization either perpendicular to or parallel to its optic axis. When an applied signal causes the modulator element to exhibit birefringence, that element causes the polarization of the laser oscillations to rotate toward the optic axis of the modulator element by an amount directly dependent on the value of the applied signal. The polarization-modulated output of the laser can be converted into an amplitude modulated signal by passing the laser output through a linear polarizer located externally of the laser cavity. Because only a small change in the birefringence of the modulator element is needed to effect substantially 100 percent amplitude modulation, the frequency of the laser oscillations is not shifted significantly by this change.

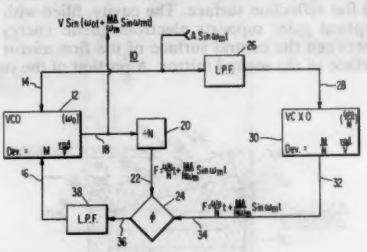
3,622,913

FREQUENCY MODULATED PHASE-LOCKED OSCILLATOR HAVING A LOW- AND HIGH-FREQUENCY RESPONSE

Don Glen Shipley, Princeton Jct., N.J., assignor to RCA Corporation

Filed Oct. 29, 1969, Ser. No. 872,185
Int. Cl. H03c 3/08
U.S. Cl. 332—16 **8 Claims**

In a phase-locked loop frequency modulator, the signal applied to the reference input of the phase comparator is a frequency-modulated signal, modulated at the same rate as the output signal, for low-modulating frequencies. For higher modulating frequencies, the signal applied to the reference



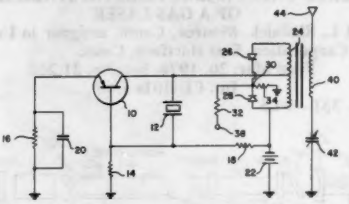
input of the phase comparator is a constant frequency source.

3,622,914

AMPLITUDE MODULATED CRYSTAL OSCILLATOR

Man Yung Chung, Seoul, Korea, assignor to Korea Institute of Science & Technology, Cheong-Ryang Seoul, Korea

Filed Nov. 24, 1969, Ser. No. 879,226
Claims priority, application Korea, Feb. 21, 1969, 1969-234
Int. Cl. H03c 1/14
U.S. Cl. 332—56 **10 Claims**



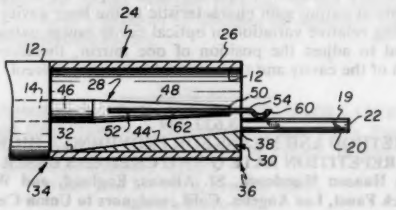
A circuit for producing amplitude modulated waves has a tuning circuit which is connected to the output of a crystal oscillator and which contains a voltage variable capacitance load, such as a semiconductor diode. The capacitance of the load is varied in response to a modulating signal to vary the impedance of the tuning circuit and thereby modulate the output signal of the oscillator.

3,622,915

ELECTRICAL COUPLER

Ronald Davo, Succasunna, N.J., assignor to Meca Electronics, Inc., Denville, N.J.

Filed Mar. 16, 1970, Ser. No. 19,885
Int. Cl. H01p 3/00; H03h 7/38
U.S. Cl. 333—34 **19 Claims**



An electrical coupler is provided for connecting a coaxial transmission line to a microstrip transmission line which provides a close impedance match over a wide band of

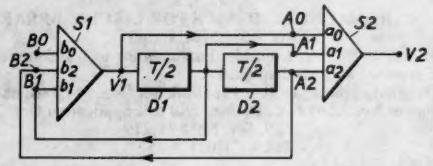
microwave frequencies. The coupler comprises an inner and an outer member which have a cross section at one end that is identical to that of the coaxial transmission line and a cross section at their other ends which includes a pair of spaced straight lines for connection to the spaced conductive strips of a microstrip transmission line. The ends of the coupler are connected by means of which provide for a uniform transition from the configuration at one end to the configuration at the other end while maintaining a substantially constant impedance.

3,622,916

PERIODIC FREQUENCY CHARACTERISTIC FILTER FOR FILTERING PERIODIC SAMPLED SIGNAL

Tore Torstensson Fjallbrant, Goteborg, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Feb. 24, 1970, Ser. No. 13,333
Claims priority, application Sweden, Mar. 11, 1969, 3314/69, Feb. 6, 1970, Sweden, 1504/70
Int. Cl. H03h 7/10
U.S. Cl. 333—70 A **5 Claims**



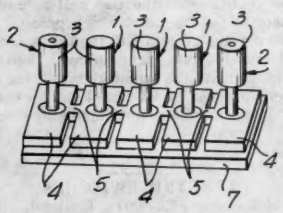
A filter has first and second multiinput addition circuits each with a single output wherein one input of the first addition is the input to the filter and the output of the second addition circuit is the output of the filter. The addition circuits are so constructed that the signal received at any input is multiplied by a weighting factor. The output of the first addition circuit is connected to one input of the second addition circuit. A plurality of serially connected delay circuits are also connected between the outlet of the first addition circuit and the inputs of the second addition circuit with the outputs of the delay circuits being connected to respective inputs of the second addition circuit and also to respective inputs of the first addition circuit. The delay of the delay circuits is equal to 1/N times the sampling period, where N is an integer greater than unity so that different transfer functions of the filter can be obtained.

3,622,917

FILTER WITH PARALLEL COMPOSITE RESONATORS

Natalia Yakovlevna Arleevskaya, Drezdens Kaya al., 10, Korp. 2, kv. 52, Leningrad, U.S.S.R.

Filed Oct. 23, 1968, Ser. No. 769,903
Int. Cl. H03h 9/04, 9/22, 9/26
U.S. Cl. 333—71 **4 Claims**



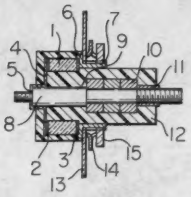
An electromechanical band-pass filter designed for high-selective filtering of electric signals within the frequency range of several kilocycles. The filter is characterized in that each of the resonators includes two parts, one of which is shaped as a dumbbell and the other of which is attached to one of the thickened ends of the dumbbell.

3,622,918

FILTER

Shiro Itø; Shoichi Iwaya, and Mitsuya Honda, all of Tokyo, Japan, assignors to TDK Electronics Company, Limited, Tokyo, Japan

Filed Jan. 22, 1970, Ser. No. 4,873
Int. Cl. H03h 7/04
U.S. Cl. 333—79 **4 Claims**



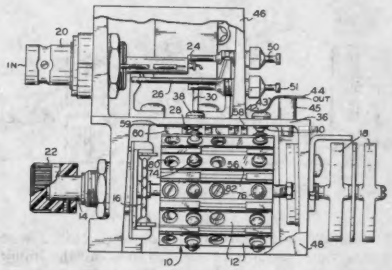
A high-voltage resistive filter of through type, using a ceramic dielectric. The filter comprises a cylindrical ceramic dielectric having electrodes formed on respective both end surfaces of said dielectric cylinders, a conductor penetrating through inner space of said cylinder and mounted at an end to one of said electrodes through a connecting metal fixture, a ferrite ring fitted to said conductor, and a chassis fitting metal fixture adhered to the other one of the electrodes. A synthetic resin is molded around the dielectric, connecting metal fixture, conductor and ferrite ring as assembled so as to bond them integrally.

3,622,919

STEP ATTENUATOR OF LOW INDUCTANCE AND HIGH BANDWIDTH

Darrel I. Wilhoit, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed June 3, 1969, Ser. No. 830,071
Int. Cl. H01p 1/22
U.S. Cl. 333—81 **11 Claims**

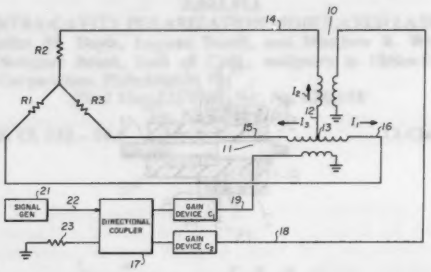


A drum attenuator for selectively connecting a plurality of attenuator sections of different value into an electrical circuit is described, in which the selected attenuator section is grounded through at least two adjacent parallel current paths of approximately equal length for each ground point to reduce inductance and to prevent signal distortion due to "ringing." The attenuator sections are each in the form of a ceramic strip having a pair of voltage divider resistors and a damping resistor coated thereon and having capacitors formed integrally therewith. The attenuator sections are releasably mounted within slots around the periphery of the attenuator drum by metal clips which also serve as ground planes. The resulting step attenuator apparatus has an extremely wide frequency bandwidth and may be used in a high-frequency cathode-ray oscilloscope to attenuate its vertical input signal by a plurality of predetermined steps.

3,622,920
WIDE-BAND PHASE-SPLITTING NETWORK

Richard V. Snyder, Glen Ridge, N.J., assignor to Merrimac Research and Development Inc., West Caldwell, N.J.

Filed June 16, 1970, Ser. No. 46,723
Int. Cl. H01p *5/12*
U.S. Cl. 333—6 **9 Claims**

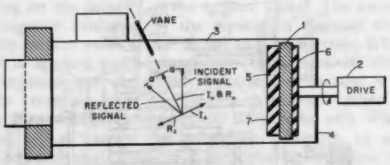


A circuit is disclosed in which a quadrature coupler splits an applied signal into a pair of signals having a 90° phase differential therebetween. The pair of signals are applied to a pair of primary windings of a pair of transformers. The secondary windings of the transformers are connected in a T configuration. Three output signals are taken from the T-connected secondaries of the transformers each having exactly 120° relative phase with respect to each other.
Equations are also disclosed describing the above circuit. A computer program is also disclosed for solving the equations enabling one of ordinary skill in the art to build multicoupled mode structures which provide various desired phase relationships.

3,622,921
POLARIZATION ROTATOR

Vernon L. Heeren, Wayland, Mass., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 22, 1970, Ser. No. 82,891
Int. Cl. H01p *1/16*
U.S. Cl. 333—21 A **5 Claims**



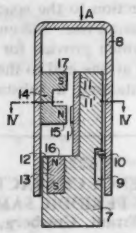
A microwave polarization rotator is disclosed wherein a conducting vane, mounted for rotation about the longitudinal axis of a circular waveguide and placed ahead of a shorting plate which closes one end of the waveguide, is disposed within a dielectric disk which operates as a frequency-compensating means for effectively broadbanding the apparatus.

3,622,922
ELECTRIC PUSHBUTTON SWITCH

Toshio Mogi, Ayase-Machi, Kouza-gun, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan

Filed Sept. 21, 1970, Ser. No. 74,010
Claims priority, application Japan, Sept. 24, 1969, 44/90181
Int. Cl. H01h *3/00*
U.S. Cl. 335—2 **7 Claims**

A pushbutton switch comprising a casing and a base mounted therein for relative movement. The base has thereon a submagnetic pole plate and a Hall element for electrical connection to a switching element. A magnet is mounted in the casing in radial alignment with the Hall element and the pole piece whereby, upon relative movement between the casing and the base, the polarity of the voltage across the Hall element is varied to thereby actuate the switching element. A second magnet is mounted on the base

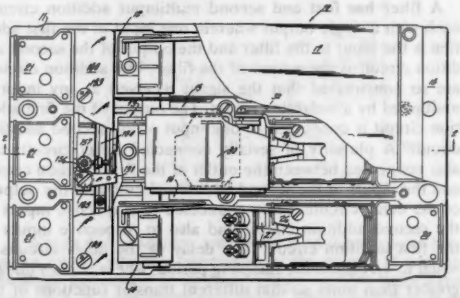


in axial alignment with the first magnet so as to normally hold the latter and the casing floating in the air by virtue of the magnetic repulsing force.

3,622,923
ELECTROMAGNETIC DEVICE FOR CIRCUIT BREAKER TRIP ASSEMBLY UNIT

Howard R. Shaffer, Glenside, Pa., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Original application July 11, 1968, Ser. No. 744,166, now Patent No. 3,505,626. Divided and this application Oct. 3, 1969, Ser. No. 871,219
Int. Cl. H01h *73/12*
U.S. Cl. 335—17 **2 Claims**



An electromagnetic device of the type having application for a circuit breaker trip unit assembly, utilizing a modified armature biasing structure as well as a means for indicating actuation of an individual magnetic assembly. The modified armature biasing structure provides a decrease of the force urging the armature away from the cooperating pole faces, as the armature gap separation decreases. By avoiding the heretofore practiced arrangement of increasing the bias force with a reduction of the gap separation, the disclosed structure permits a wider range of operation. The visual indicating means in conjunction with the trip unit assembly serves to readily indicate to the operator which pole of a multiphase device has been actuated and will require manual reset. The above noted features may be combined, and in one such combined arrangement, the armature bias force is reversed at the concluding portion of its travel, to lock the armature against the magnet pole faces until manually reset.

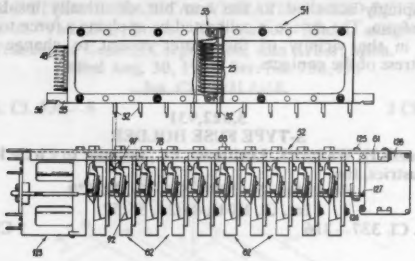
3,622,924
ELECTRIC SWITCHES

Michael David Harcourt, Coventry, England, assignor to The General Electric Company Limited, London, England

Filed Aug. 17, 1970, Ser. No. 64,300
Claims priority, application Great Britain, Aug. 15, 1969, 40,950/69
Int. Cl. H01h *67/26*
U.S. Cl. 335—112 **9 Claims**

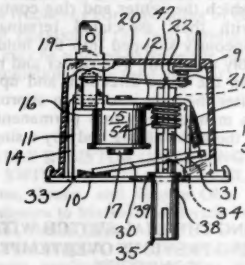
A crossbar switch comprising a rectangular array of contact sets formed by intersecting wires. Each contact set is

operated by an individual interposer member, each row of interposer members being moved by a select magnet armature into operative positions and each column of interposer members being driven, if in an operative position, to operate their



respective contact sets. The travel of the select magnet armature is limited in one direction by a stop member and in the other by the magnet core which is itself biased against the stop member.

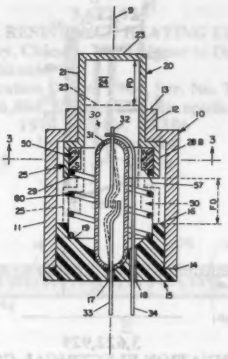
3,622,925
PUSH-TO-START SWITCH
Robert H. Rose, Milwaukee, Wis., assignor to U.S. Controls Corp., Milwaukee, Wis.
Continuation-in-part of application Ser. No. 853,878, Aug. 28, 1969, now abandoned. This application Sept. 25, 1970, Ser. No. 75,618
Int. Cl. H01h *3/20*
U.S. Cl. 335—186 **12 Claims**



An armature is fulcrumed near one end and its other end is normally spring urged in a direction away from the pull of an electromagnet. An actuator is slidably associated with a manually operable plunger for movement axially thereof, and there is interengagement so that pushing of the plunger causes movement of the armature toward the electromagnet. Before the armature engages the core the actuator causes closing of contacts in an electric circuit to energize the coil so that the armature thereafter holds the actuator in contact-closing position, there being spring means for returning the plunger to starting position while the actuator is thus held, and there being means between the armature and actuator for returning the actuator to starting position when the coil is deenergized.

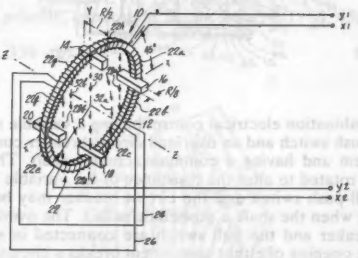
3,622,926
MAGNETICALLY ACTUATABLE REED SWITCH ASSEMBLY
George Risk, 2659 Pershing Road, Columbus, Nebr.
Filed Mar. 12, 1970, Ser. No. 18,941
Int. Cl. H01h *51/28*
U.S. Cl. 335—205 **4 Claims**

A reed switch assembly of the type comprising a pair of spaced-apart flexible magnetically permeable electrically conductive reeds adapted to contact each other when brought into proximity to magnetic flux. Herein, the magnetic flux is supplied from a permanent magnet formed of permanently magnetized particles distributed throughout a structurally continuous flexible resinous matrix, said per-



manent magnet-means being annularly C-shaped and resiliently constrictable and being employed in the switch assembly under conditions of unrelieved constricted stresses.

3,622,927
DEFLECTION YOKE
Clayton A. Washburn, 24 Andrea Lane, Thornwood, N.Y.
Filed Jan. 20, 1970, Ser. No. 4,363
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **17 Claims**

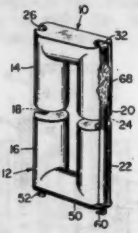


Several substantially circular deflection yoke structures for cathode-ray tubes are disclosed. Their common principal characteristics include means whereby the features of orthogonal (x, y) deflection axes are identical. This results in symmetry about the diagonal (45°) deflection positions as well as about the deflection axes. These structures each employ eight identical toroidally wound coil segments. Four coils, symmetrically placed on both sides of the x-axis, provide x-axis deflection. Four coils similarly located with respect to the y-axis provide y-axis deflection. Each coil occupies a 45° segment from its axis outwardly along an annular core piece.

3,622,928
TRANSFORMER CORE WITH ADJUSTABLE AIRGAP
Harry P. Lee, 1300 Edgewood Way, Apt. 105, Oxnard, Calif.; Peter Billic, 1446 W. Beverly Drive, Oxnard, Calif., and Clifford B. Alfors, 4671 Student St., Ventura, Calif.
Filed June 29, 1970, Ser. No. 50,611
Int. Cl. H01f *21/06*
U.S. Cl. 336—134 **1 Claim**

A transformer core made up of two sections separated by an airgap, the width of this gap being adjustable to minimize the overall transformer loss ratio. A pair of small runner tubes are affixed to one of the core sections, each tube being internally threaded to receive a screw journaled on the other

core section. Rotation of these screws allows for precise adjustment of the width of the gap between the core sections to



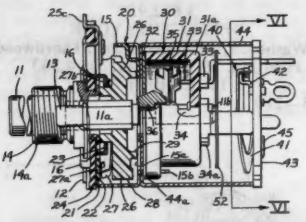
a point where maximum power transfer to an output circuit is obtained.

3,622,929

COMBINATION ELECTRICAL CONTROL

Wayne A. Barden, and Mervin B. Arisman, both of Elkhart, Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Jan. 8, 1964, Ser. No. 336,580
Int. Cl. H01h 71/16
U.S. Cl. 337—3 12 Claims



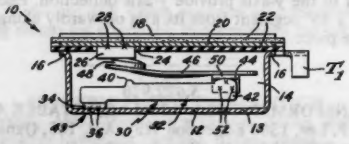
A combination electrical control having a variable resistor, a pull-push switch and an overload circuit breaker connected in tandem and having a common actuator shaft. The shaft may be rotated to alter the resistance of the variable resistor. The pull-push switch and the circuit breaker may be closed or reset when the shaft is pushed or pulled. The overload circuit breaker and the pull switch are connected in series so that the opening of either component breaks a circuit.

3,622,930

MOTOR PROTECTOR APPARATUS AND METHOD

John R. D'Entremont, Foxboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 16, 1969, Ser. No. 866,993
Int. Cl. H01h 37/04, 37/52, 61/013
U.S. Cl. 337—107 9 Claims



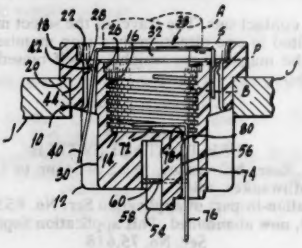
A motor protector particularly suited for use with appliance motors having a rate of rise up to 30° C. per second and higher, comprising a heater/thermostatic disc assembly in which the major heat transfer from the heater to the disc is by conduction. The disc is supported solely by the heater in such a way that the first "on" time is short and the first "off" time is long. The structure is such that the standard deviation of the first cycle "on" time is within a 3 second range necessary to protect such motors. The assembly is placed in a heat conductive can with the heater cantilever mounted on the bottom wall thereof. The thermostatic disc is in turn cantilever mounted on the heater, a contact is attached to the distal free end of the disc and is adapted to engage and disengage a stationary contact mounted on a cover which is clampingly attached to the can but electrically insulated therefrom. The device is calibrated by applying a force to the can in the vicinity of the heater mount to change the prestress of the contacts.

3,622,931

S-TYPE FUSE HOLDER

Kenneth H. Walterick, Levittown, Pa., assignor to Circle F Industries, Inc.

Filed Mar. 26, 1970, Ser. No. 22,879
Int. Cl. H01h 85/24, 85/52
U.S. Cl. 337—216 1 Claim



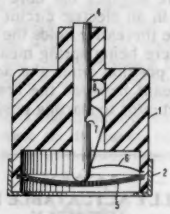
An S-type fuse holder designed to simplify and speed up assembly, and to reduce the number and cost of its component parts, in which the center and ring contact elements are combined with their associated terminals and are thereafter simultaneously snapped into the holder body for permanent assembly therewith. The center and ring contacts are insertable from the same direction, and upon insertion snap into place after they are inserted to approximately the same extent, in a manner to permit permanent and simultaneous assembly thereof with the body by a single stroke of an assembly tool.

3,622,932

SELF-RESTORING THERMAL SWITCH WITH MEANS FOR INDICATING PREVIOUS OVERTEMPERATURE CONDITION

Peter J. Cunavelis; Edmund Joseph Distefano, and Donald L. Osterhoudt, Jr., all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 16, 1970, Ser. No. 55,325
Int. Cl. H01h 37/08
U.S. Cl. 337—376 3 Claims



A thermally operated switch which utilizes a bimetallic diaphragm. When an overtemperature condition inverts the diaphragm, the diaphragm pushes up a plunger by a sufficient amount to enable a spring to take over and push the plunger up farther. The spring will then hold the plunger in its up position to provide a visual indication of the existence of the overtemperature condition even after the diaphragm has

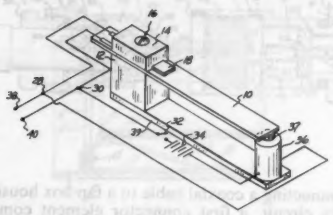
cooled enough to snap back to its normal position to turn the switch back on.

3,622,933

ELECTROMECHANICAL VIBRATING REED DEVICE

Jan A. Van Den Broek, Ann Arbor, Mich., assignor to Transidyne General Corporation, Ann Arbor, Mich.

Filed Aug. 30, 1968, Ser. No. 756,494
Int. Cl. G01l *1/18*
U.S. Cl. 338—5 2 Claims



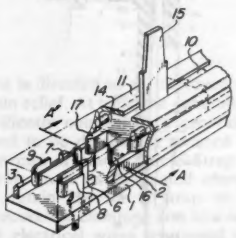
An electromechanical vibrating reed device having a vibrating reed member with an end thereof clamped in a base member. The reed member is provided with a transducer consisting of a substantially thin film of a piezoresistive material having a resistivity varying as a function of the mechanical stress imposed thereon disposed at a portion of the reed member subjected to maximum bending during oscillation or vibration of the reed member. A DC current flowing across the piezoresistive thin film is modulated in amplitude as a function of the amplitude of vibration of the reed member at a frequency corresponding to the natural resonant frequency of vibration of the reed member, and such modulated signal may be utilized to drive the reed member such as to sustain oscillation of the reed member.

3,622,934

VARIABLE RESISTOR OF SLIDING TYPE WITH SWITCH ACTIVATED BY SLIDER

Tadashi Yano, Osaka, and Shunzo Oka, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma-shi, Osaka, Japan

Filed May 22, 1970, Ser. No. 39,738
Claims priority, application Japan, May 30, 1969, 44/52233
Int. Cl. H01c *9/08*
U.S. Cl. 338—198 9 Claims



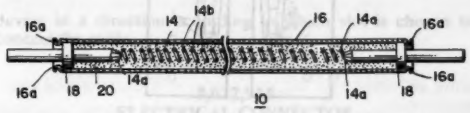
A variable resistor of sliding type with switch including a dielectric base having a resistance element and a conductive element, a slider being movable along a predetermined line on the dielectric base, a variable resistor of sliding-type means including the resistance element, the conductive element and a plurality of contactors being provided on the underside of the slider, a switching means including movable and stationary contacts and being provided on at least one of the both end portions of the dielectric base in the predetermined line, and a switch-working means being provided at the slider and being engaged with the movalbe contacts to actuate the switching means in connection with movement of the slider.

3,622,935

HELICAL RESISTANCE HEATING ELEMENT

Sterling A. Oakley, Chicago, Ill., assignor to Oakley Industries Incorporated, Skokie, Ill.

Original application Dec. 6, 1968, Ser. No. 781,883, now Patent No. 3,536,884. Divided and this application June 18, 1970, Ser. No. 47,386
Int. Cl. H01c *1/14*
U.S. Cl. 338—329 7 Claims



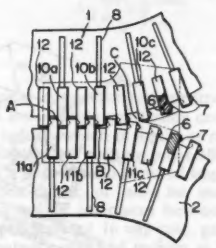
An electrical heating apparatus comprising a resistance heating element having a helical end convolution and a terminal member havng one end defined by a plurality of convergent, longitudinally extending, radially spaced projecting ridges, said ridges being welded to said end convolution at radially spaced points lying on a circle spaced between a mean diameter and an inner diameter of said end convolution.

3,622,936

ELECTRICAL MULTICONTACT CONNECTOR

Satoshi Negishi, Yokohama-shi, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Nov. 10, 1969, Ser. No. 875,142
Claims priority, application Japan, Dec. 18, 1968, 43/109957
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 F 8 Claims



An electrical multicontact connector of zipper style is characterized in that there are spatially attached a plurality of engaging members to each of parallel-disposed, flexible supporting sheets or strips, and all or some of the engaging members of one strip are coupled with the corresponding ones of the other strip so as to form a plurality of disengageable electric conducting units, each of which is insulated from the adjacent ones by suitable means.

3,622,937

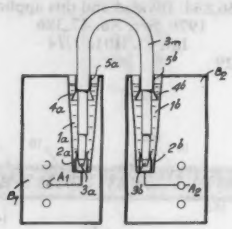
ELECTRIC CONNECTING DEVICE

Yves Bokshorn, Villiers-sur-marne, and Jean-Pierre H. Boudiak, Gagny, both of France, assignors to COQ-France, Pantin, France

Filed Feb. 12, 1970, Ser. No. 10,792
Claims priority, application France, Dec. 9, 1969, 6942446
Int. Cl. H01r *31/08*
U.S. Cl. 339—19 4 Claims

An assembly of electrical connecting devices characterized in that it comprises, in a high-voltage electric station, a first contact disposed in the bottom of a cup filled with a liquid dielectric substance and projecting towards the bottom of a

first compartment or cell, said first contact being electrically connected to a first conductor adapted to transmit electric current, a second contact disposed in the bottom of a cup filled with a liquid dielectric substance and projecting towards the bottom of a second compartment or cell, said second contact being electrically connected to a second conductor adapted to transmit electric current, a connecting member in the form of a bent bar having substantially the shape of an inverted U, made of conducting material and having its ends immersed in said cups for engagement with said contacts and its intermediate portion emerging from said cups and adapted to be electrically insulated.

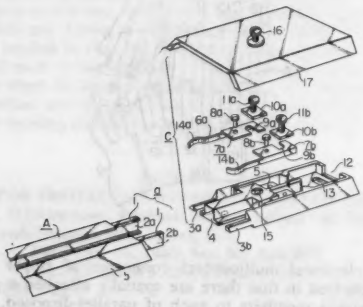


3,622,938

ELECTRIC POWER DISTRIBUTION DEVICE

Masamichi Ito, and Yoshiyuki Ishida, both of Kadoma-shi, Japan, assignors to Matsushita Denko Kabushiki Kaisha, Osaka, Japan

Filed Dec. 4, 1969, Ser. No. 882,083
Claims priority, application Japan, Dec. 10, 1968, 43/108135; Mar. 6, 1969, Japan, 44/20239; Mar. 10, 1969, Japan, 44/21501; Mar. 6, 1969, Japan, 44/20239
Int. Cl. H01r *13/60*
U.S. Cl. 339—21 R **5 Claims**



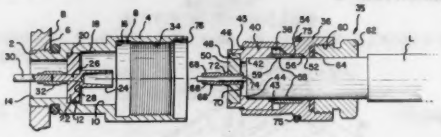
The invention provides a connector means adaptable for both mutual interconnection between electric power distribution ducts and power feed-in connection of a feed-in member to one of the ducts. The means comprises an insulative base member having at least one endwise projection and containing at least a pair of contactors extending in the same endwise direction. When the means is engaged to an end of the duct, said projection fits in a longitudinal space between respective opposing conductors in the duct or respective conductors and respective sidewalls of a duct housing so as to have the means mechanically held to the duct end, while said contactors enter into resilient electric contact with the respective conductors of the duct. When the connector means is used for the power feed-in connection, the contactors are connected at the other end to power source lines and, when used for the mutual interconnection of ducts, the means is provided with the projections and contactors respectively symmetrically extending in both endwise directions.

3,622,939

COAXIAL CABLE CONNECTION SYSTEM

Edgar Wilmot Forney, Jr., Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Feb. 27, 1970, Ser. No. 15,178
Int. Cl. H01r *13/54, 17/04*
U.S. Cl. 339—89 C **4 Claims**



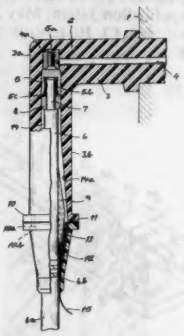
For connecting a coaxial cable to a tap box housing a high-frequency circuit, a first connector element comprising an outer conductor is secured to the box and is provided with a center contact which is secured at one end to the circuit, the other end being a socket with a conical bore. A second connector element is secured to the face end of the first element and includes an outer cylindrical member secured to the outer conductor of the cable and having centrally located spring fingers through which the inner conductor of the cable extends, the spring fingers being forced to grip the center conductor where the spring fingers enter the conical bore when the two connector elements are assembled.

3,622,940

CONNECTOR ASSEMBLY FOR ELECTRICAL APPARATUS

Reinhold Illies, Wurselen, Germany, assignor to Firma Neidecker & Co., Basel, Switzerland

Filed Dec. 22, 1969, Ser. No. 887,111
Claims priority, application Germany, Dec. 21, 1968, P 18 16 467.5
Int. Cl. H01r *13/52*
U.S. Cl. 339—94 R **8 Claims**



An angle connector for high-voltage rotary-field (three-phase) transformers in which a cast synthetic resin jack body is received in the transformer housing and forms at its end remote therefrom a socket extending at right angles to a bolt, pin or rod to which the socket is affixed, both socket and rod being imbedded in the insulating composition. A plug is fitted into the socket and is potted in a frustoconical sleeve which is flanged to a sleeve of the jack body.

3,622,941

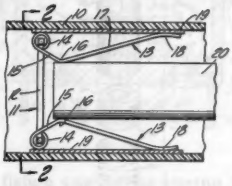
HEAT RECOVERABLE ARTICLE WITH MECHANICAL INSERT

Judson Douglas Wetmore, San Mateo, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of application Ser. No. 591,914, Nov. 3, 1966, now abandoned. This application Oct. 30, 1968, Ser. No. 771,810

Int. Cl. H01r *11/20*

U.S. Cl. 339—98 33 Claims



A heat recoverable article for making mechanical or electrical connections or the like having a mechanical insert positioned within a heat recoverable sleeve. The mechanical insert is constructed so that it has a mechanical advantage, that is, it in some fashion multiplies or converts the force exerted upon it by heat recovery of the sleeve, and applies the force to the object or objects to be connected.

3,622,942

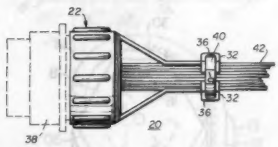
STRAIN RELIEF

Edward F. Rynk, Linden, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Apr. 27, 1970, Ser. No. 32,162

Int. Cl. H01r *13/58*

U.S. Cl. 339—107 6 Claims



The invention is directed to an improved unitary, integral, detachable strain relief. At least one generally arcuate clamping arm is resiliently coupled to a generally tubular body member adapted to be detachably secured about the outer surface of a conector or similar article. Strap receiving means project outwardly from its associated clamping arm to at least partially retain therein a strap or band disposed thereabout to secure the clamping arm to a cable or a plurality of insulated electrical wires positioned immediately adjacent thereto and extending outwardly from the connector.

3,622,943

CABLE CLAMP WITH DIRECTING MEANS

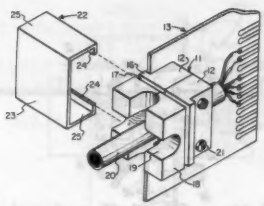
William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Laboratories Inc., Northlake, Ill.

Filed Aug. 5, 1970, Ser. No. 61,120

Int. Cl. H01r *13/58*

U.S. Cl. 339—103 5 Claims

A cable clamp mounted to a printed-wiring circuit board has means for directing a cable in a chosen one of several directions. The outer face has a plurality of slots radiating from the position in which the cable is clamped, and the cable may be bent into a slot and held by a constraining device in a direction according to which slot is chosen to contain the cable.



3,622,944

ELECTRICAL CONNECTOR

Takane Tsuchiya, Yokohama-shi; Tetsuya Ohtani, Yokohami-shi; Akira Sato, Tokyo, and Syoichi Ito, Yokohama-shi, all of Japan, assignors to Tokai Denki Kabushiki Kaisha, Tokyo, Japan

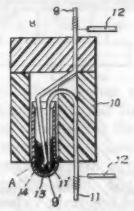
Filed Dec. 5, 1969, Ser. No. 882,456

Claims priority, application Japan, Aug. 5, 1969, 44/61590

Aug. 7, 1969, Japan, 44/62106

Int. Cl. H01r *3/08*

U.S. Cl. 339—118 R 6 Claims



In this electrical connector, an electrical connection is made through a low melting point alloy consisting essentially of gallium and indium which is liquid at room temperature. In order to retain the low melting point alloy, contact points may be made of a porous solid material impregnated with the low melting point alloy, or may be made of cadmium, bismuth or lead having interfaces between which the low melting alloy is precipitated. In any case, gallium may be provided at one contact point and indium at the other contact point, so that when the two points are brought together the low melting point alloy is formed.

3,622,945

MULTIPURPOSE RF WALL TAP

Eric Winston, Melrose Park; Donald H. Rogers, Ivyland, and Joseph Oprysko, Philadelphia, all of Pa., assignors to Jerrold Electronics Corporation, Hatboro, Pa.

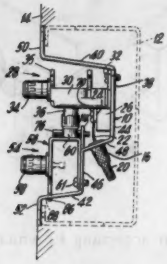
Filed May 11, 1970, Ser. No. 36,359

Int. Cl. H01r *13/60*

U.S. Cl. 339—121 8 Claims

A multipurpose wall tap for use with CATV and MATV installations or the like, having a mounting frame which fits into a standard electrical outlet box. Affixed to the frame is a primary television signal module, including the required circuitry to receive the television signal from the lead-in cable, and a coaxial jack for connection to a television set antenna lead. One or more of a plurality of different auxiliary modules may be selectively installed on the mounting frame and connected to the primary TV module. Circuitry within these auxiliary modules converts the cable signal for application to a variety of equipments and associated leads, such as a coaxial TV antenna lead, a twin wire TV antenna lead, or a

single wire FM antenna lead. A cover plate protects the jacks and terminals extending from the modules, and provides the



entire assembly with the appearance of a conventional electrical outlet.

3,622,946

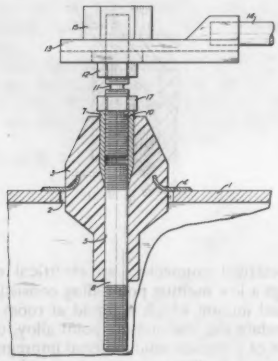
ELECTRICAL CONNECTOR WITH BREAKAWAY STUD

Eugene T. Rogers, Mount Pleasant, Pa., assignor to Permali Incorporated, Mt. Pleasant, Pa.

Filed Mar. 2, 1970, Ser. No. 15,507

Int. Cl. H01r *9/10*

U.S. Cl. 339—126 RS **3 Claims**



An internally threaded metal sleeve is rigidly mounted in a passage through an insulating bushing and extends outwardly to an end of the passage or beyond it. The bushing is intended to be mounted in the wall of electrical apparatus, with the outer end of the sleeve outside. Screwed into the sleeve and projecting from its outer end is a threaded stud that carries a nut which presses tightly against the outer end of the sleeve. Outwardly of the nut the stud is provided with a groove that weakens it, and a pair of nuts mounted on the stud outwardly of the groove are for holding an electric cable terminal which, if enough tension is applied to it, will cause the stud to break at its weakening groove without damaging the sleeve or bushing.

3,622,947

LAMP BASE EXTENSION

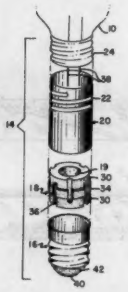
Robert M. Griffin, C/O Sylvania Electric Products, Salem, Mass.

Filed Sept. 2, 1970, Ser. No. 68,856

Int. Cl. H01r *13/30*

U.S. Cl. 339—146 **3 Claims**

A lamp base extension for halogen-type lamps where the base to filament length is increased without enlarging the size of the lamp envelope. The extended base comprises a preformed ceramic bridge spaced between an extension skirt and a screw base. The ceramic bridge is formed with reduced end portions and spaced slots about its periphery. The metal base and extension skirt are fitted over each reduced end of the bridge and the edges of the skirt and base are crimped



into the slots of the bridge. This forms an extended base that provides an increased light center length for the lamp without enlarging the lamp envelope or the utilization of an expensive glass insulation bridge.

3,622,948

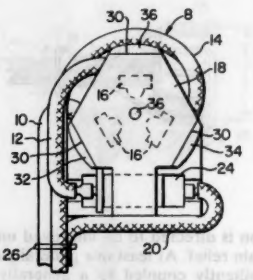
ELECTRICAL CONNECTOR CLUSTER ASSEMBLY WITH MOTOR PROTECTION

Donald W. Foster, Columbus, Ohio, assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 6, 1970, Ser. No. 9,377

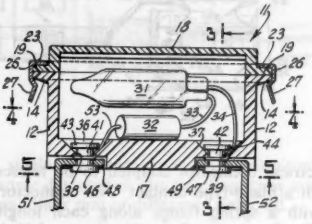
Int. Cl. H01r *3/00, 33/72*

U.S. Cl. 339—147 R **7 Claims**



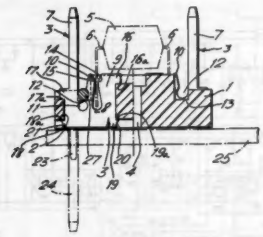
The invention comprises an apparatus especially adapted for connecting hermetic compressor motor leads disposed in a cluster to a hermetic shell-mounted terminal of the type having three closely spaced pins with flat tabs thereon. The cluster assembly includes a block with cavities therein in an orientation in which the contact sockets are relatively flat and disposed at equilateral angles to each other so as to align with the tabs on the pins and so that the contact wires extend in a pinwheel arrangement at the edge of the block. An additional socket is provided in the block for reception of a thermal sensitive device that provides overload protection for the compressor motor, with the thermal sensitive device wired in series with one of the wires of the pinwheel arrangement.

3,622,949
ELECTRICAL FIXTURE CASE
Wesley T. Sorenson, West Hartford, Conn., assignor to Sorenson Lighted Controls, Inc., West Hartford, Conn.
Filed Oct. 20, 1969, Ser. No. 867,787
Int. Cl. H01r 9/14, 9/20
U.S. Cl. 339—147 C 1 Claim



An electrical fixture case having interior funnel recesses and guides for accommodating rivet or wire connections.

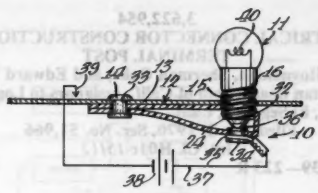
3,622,950
ELECTRICAL CONNECTOR ASSEMBLIES
Heinz A. Millinger, Wiesbaden, Germany, assignor to AMP Incorporated, Harrisburgh, Pa.
Filed June 16, 1969, Ser. No. 833,400
Claims priority, application Germany, June 26, 1968, P 17 65 657.4
Int. Cl. H01r 13/54, 11/22
U.S. Cl. 339—174 4 Claims



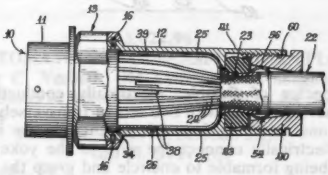
The invention concerns an electrical connector assembly comprising a housing of flexible insulating material and having a number of transverse passageways, each of which retains a connector element by complementary engagement of shoulders formed in the passageway walls and the element. Each element is stamped from sheet metal and has a contact element, e.g., a terminal post, to which connections can be made, and a socket formed by wall portions one of which is held fixed and the other of which is movable in the passaGeway. The socket receives a lead from a modulat pack, and the lead may be retained in the socket by wedging a nonconductive rod member in a recess between the contact element and the movable wall portion. The assembly is easy to make, compact, versatile and resistant to vibration.

3,622,951
SOCKET STRUCTURE
Alois F. Schoenung, Naperville, Ill., assignor to Cadaco, Inc.
Filed Aug. 6, 1970, Ser. No. 61,713
Int. Cl. H01r 33/38, 3/06
U.S. Cl. 339—176 L 18 Claims

A lamp socket structure for use with a threaded base lamp formed of a sheet of insulating material. The lamp socket structure is adapted to be mounted on a conductive plate defining one connection to the lamp base and the socket structure is provided with a contact defining the other connection to the lamp base. The sheet is provided with an opening defining means for threading the lamp thereto.

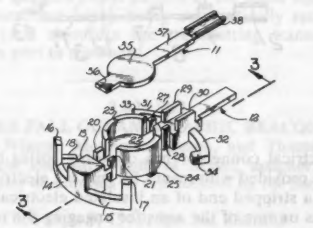


3,622,952
SHIELD TERMINATION FOR ELECTRICAL CONNECTORS
Wolfgang Hilbert, Holzkirchen, Germany, assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Jan. 19, 1970, Ser. No. 3,986
Int. Cl. H01r 17/18
U.S. Cl. 339—177 R 2 Claims



Shield termination including clamp means are used for connection to a connector shell and for clamping engagement with an end portion of an outer flexible metallic shield of a cable, such clamp means being operable independently of strain relief means engaged with a portion of the cable shield spaced from the end portion. The clamp means comprises a first metallic member arranged to fit within the cable shield and including a thin wall having axially extending angularly spaced slots and a second metallic member surrounding the cable shield and coupled to the connector shell through a threaded ring. The second member has an inner surface portion of frustospherical shape while the wall of the first member is of complementary shape, resulting in a wedge enegagement and resilient deformation of the weall of the first member. Ground lugs are provideded on the first member for connection to contacts and conductors to be grounded.

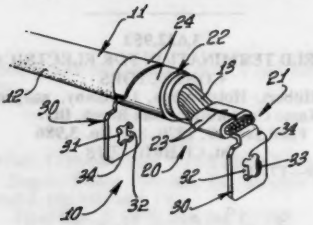
3,622,953
ELECTRICAL TERMINAL ASSEMBLY
George P. Greenamyer, Monrovia, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.
Filed Feb. 25, 1970, Ser. No. 13,924
Int. Cl. H01r 13/40
U.S. Cl. 339—212 7 Claims



An electrical terminal for use in a gas water heater control or the like in which the insulator has integral leaf spring

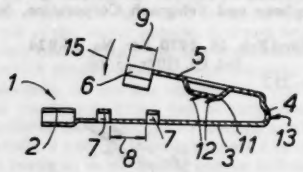
wings with projections to snap fit into a groove in the control body to retain the insulator therein.

3,622,954
ELECTRICAL CONNECTOR CONSTRUCTION FOR TERMINAL POST
Vram E. Hovnanian, Sherman Oaks, and Edward Kitzmiller, Manhattan Beach, both of Calif., assignors to Logic Dynamics, Inc., El Segundo, Calif.
Filed July 2, 1970, Ser. No. 51,966
Int. Cl. H01r 15/12
U.S. Cl. 339—223 R 13 Claims



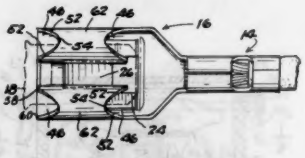
A connector of flexible, electrically conductive sheet material having a yoke with two sets of transversely protruding tabs, one set being formable to encircle the strands of wire to electrically connect the wire to the yoke, and the other set being formable to encircle and grasp the insulated wire, and a pair of parallel ears integrally formed at each end of the yoke and extending at right angles thereto. Each ear has a terminal post-receiving aperture, into which opposed longitudinally locating protrusions and opposed transverse tines extend, with the ends of the tines initially being bent away from the plane of the ear to enlarge the effective size of the aperture in order to receive the post, and being crimped toward such plane and into contact with opposed sidewalls of the post to electrically connect and secure the connector to the terminal post.

3,622,955
ELECTRICAL CONNECTOR
Raymond Fernex, Marignier, France, assignor to AMP Incorporated, Harrisburg, Pa.
Filed Oct. 23, 1969, Ser. No. 868,706
Claims priority, application France, Oct. 23, 1968, 50527
Int. Cl. H01r 11/22
U.S. Cl. 339—223 R 4 Claims



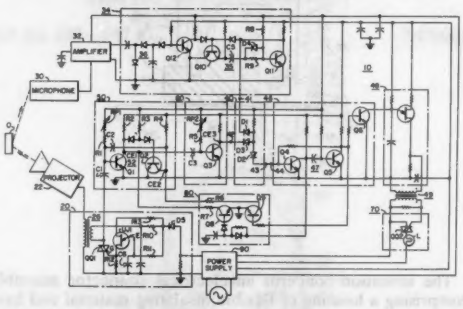
An electrical connector has opposing spring-biased arms which are provided with means for making electrical connection with a stripped end of an insulated electrical conductor and means on one of the arms for engaging the insulation of the conductor to retain the end of the conductor in position in the connector. Contact-engaging means is located on the connector for electrical engagement with a complementary contact means.

3,622,956
ELECTRICAL CONNECTOR
Alfred M. Zak, 6110 Casmere Ave., Detroit, Mich.
Filed Sept. 9, 1969, Ser. No. 856,325
Int. Cl. H01r 13/12
U.S. Cl. 339—258 S 13 Claims



An electrical connector adapted to be telescopically engaged with a blade-type contact. The connector has a base formed with a spring flange along each longitudinal side thereof. The flanges are formed as inverted U-shaped channels each having a free lower contact edge. Each channel is relieved at its opposite ends preferably along axially inclined planes so that the top bight portion is substantially shorter in length than the contact edges whereby to impart substantial flexibility to the portions of the flanges provided with the contact edges.

3,622,957
ULTRASONIC OBJECT DETECTOR
Ronald S. Libengood, Monroeville, and Frederick G. Geil, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 26, 1970, Ser. No. 5,637
Int. Cl. G01s 9/68
U.S. Cl. 340—1 R 11 Claims

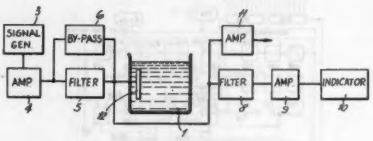


An ultrasonic object detector system operating on the echo-ranging principle and including circuit adjustments which render the object detector system responsive to objects at a preselected distance. Additional circuit adjustments provide control of the depth of field sensitivity of the object detector system relative to the selected object distance as well as providing the capability of "locking-in" the object to prevent loss of object recognition.

3,622,958
ACOUSTIC DETECTION APPARATUS
David Gordon Tucker, Birmingham, and Vernon Gearon Welsby, Solihull, both of England, assignors to National Research Development Corporation, London, England
Filed May 28, 1969, Ser. No. 828,532
Claims priority, application Great Britain, May 21, 1968, 26072/68
Int. Cl. G01s 9/66
U.S. Cl. 340—1 R 6 Claims

Accoustic detection apparatus for detecting the presence of gas bubbles in a liquid, for example, blood, comprises a

transducer and a detector which is selectively tuned to detect a frequency other than that transmitted and which is generated in the medium due to the nonlinear effect of the



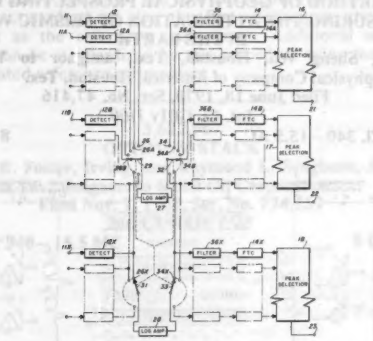
bubbles. A single frequency may be transmitted and its second harmonic detected or else two frequency components transmitted and their sum or difference detected.

3,622,959

LOGARITHMIC FAST TIME CONSTANT SONAR RECEIVER

Edward C. Watters, Annapolis, Md., assignor to The United States of America as represented by the Secretary of the Navy

Filed July 10, 1963, Ser. No. 294,804
Int. Cl. G01s *9/66, 3/00*
U.S. Cl. 340—3 D **2 Claims**



1. A logarithmic fast time constant sonar receiver comprising:
a plurality of circuits for producing simultaneous signals from a plurality of azimuth beams,
a plurality of detectors, each of said detectors connected to a different one of said circuits,
a logarithmic amplifier, first switching means sequentially connecting said amplifier to the outputs of said detectors,
a plurality of lowpass filters, and
second switching means sequentially connecting said plurality of lowpass filters to the output of said amplifier,
so that said plurality of signals are sequentially processed.

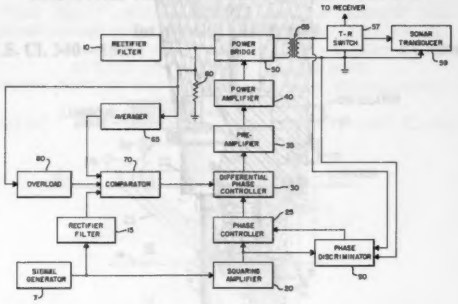
3,622,960

SONAR TRANSMITTER SYSTEM

Benjamin Barron, Malba, and Ernest Weiss, Plainview, both of N.Y., assignors to Lear Siegler, Inc., Melville, N.Y.

Filed June 13, 1969, Ser. No. 832,925
Int. Cl. G01s *9/66*
U.S. Cl. 340—3 R **26 Claims**

A transmitter arrangement for a sonar active transmit-receive system in which the transducer is controlled to provide a wave front which is more coherent in phase and power by the use of a feedback control signal from the transducers.



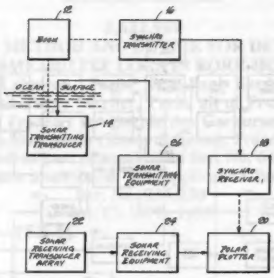
The transducers are also made to have a constant output impedance which is of a relatively low value.

3,622,961

AUTOMATIC SONAR-BEAM-PATTERN PLOT

Alexander C. Vasiloff, Old Lyme, Conn., assignor to The United States of America as represented by the Secretary of the Navy

Filed Jan. 15, 1970, Ser. No. 3,127
Int. Cl. G01s *3/00*
U.S. Cl. 340—5 C **1 Claim**



Means for making a polar plot of the beam pattern of a sonar transducer array. A sonar transmitting transducer is suspended from a long boom aboard a ship. A synchro transmitter is attached to the swivel point of the boom and electrically connected to a synchro receiver which rotates the polar-plot paper of a pen recorder. The input to the pen of the recorder is the output signal of the receiving sonar equipment on the ship, the beam pattern of the sonar equipment's receiving-transducer array being automatically recorded as the boom (and therefore the transmitting transducer) is rotated from port to starboard.

3,622,962

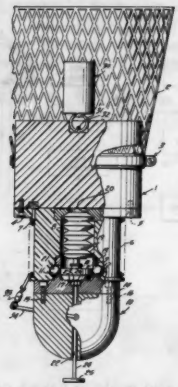
FREE FALL OCEANOGRAPHIC BEACON

Clifford L. Winget, Monument Beach, and Thomas B. Aldrich, West Falmouth, both of Mass., assignors to The United States of America as represented by the Secretary of the Navy

Filed Sept. 9, 1969, Ser. No. 856,293
Int. Cl. B63b *51/02*
U.S. Cl. 340—5 R **6 Claims**

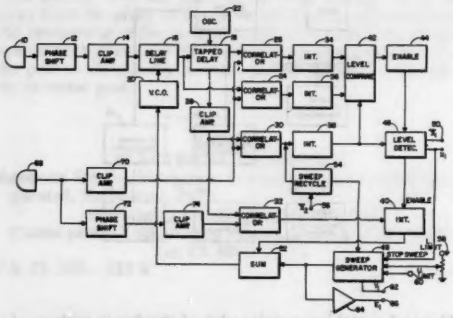
A free fall beacon for marking an ocean bottom location has a buoyant member and an anchor normally locked

together by a pressure-operated latching device. The buoyant member and the anchor are interconnected by a tether line



which determines the height above the ocean floor at which the buoyant member is moored.

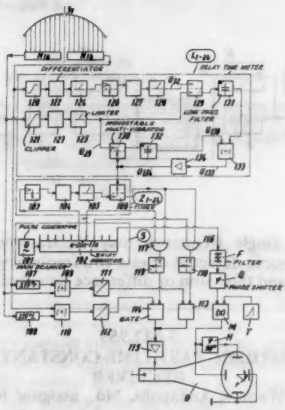
3,622,963
CONTROL APPARATUS
George E. Sage, Redmond, King, Wash., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Jan. 29, 1969, Ser. No. 794,932
Int. Cl. G01s *3/00*
U.S. Cl. 340—6 R **8 Claims**



Apparatus utilizing polarity coincidence for determining direction of an object from a set of transducers and further utilizing a pair of correlating circuits to distinguish a true signal from multipath signals.

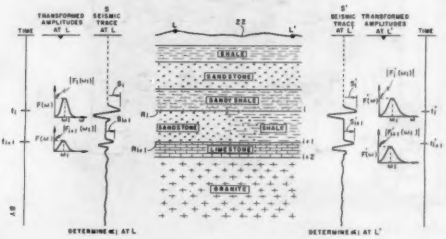
3,622,964
SYSTEM FOR DETERMINING THE DIRECTION OF ORIGIN OF WATERSOUND WAVES
Reinhard Wilhelm Leisterer, Bremen, Germany; Gunther Berkelmann, Achim, Germany, and Heinz Thiede, deceased, late of Lilienthal, Germany (by Irmgard Thiede, administratix of assets), assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany, by said Leisterer and said Berkelmann
Filed July 16, 1969, Ser. No. 842,113
Int. Cl. G01s *3/100*
U.S. Cl. 340—6 R **7 Claims**

The invention provides an arrangement for determining the direction of sound waves incident within a large area of bearing, using an array of transducers allocated to adjacent sectors of the area and which are periodically scanned to provide indications on an oscilloscope the beam of which is rotated in synchronous relation to the scanning, the direction



of origin of sound within each of the different sectors being determined by measuring the phase difference or travel time difference between two of the transducers.

3,622,965
METHOD OF GEOPHYSICAL PROSPECTING BY MEASURING THE ATTENUATION OF SEISMIC WAVES IN THE EARTH
Chang Sheng Wu, Houston, Tex., assignor to Western Geophysical Company of America, Houston, Tex.
Filed June 18, 1970, Ser. No. 47,416
Int. Cl. G01v *1/00*
U.S. Cl. 340—15.5 AC **8 Claims**

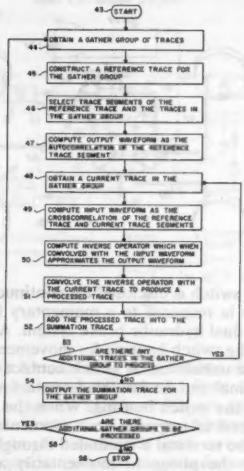


A method of seismographic exploration, to determine the attenuation coefficient in a layer from which there is obtained substantial and persistent reflection energy, by: transforming the detected reflected signals to an integral transform domain, selecting a band of transform variables over which there is substantial and persistent reflection energy, and measuring the ratios of the amplitudes of the transformed signals to obtain a measure of the attenuation coefficient of the reflected seismic signals in the studied layer.

3,622,966
WAVELET STANDARDIZATION
Charles Floyd George, Jr., Plano, Tex.; Howard A. Slack, Anchorage, Alaska, and Hugh Carroll Reeves, Plano, Tex., assignors to Atlantic Richfield Company, New York, N.Y.
Continuation-in-part of application Ser. No. 689,905, Dec. 12, 1967. This application July 17, 1970, Ser. No. 55,714
Int. Cl. G01v *1/28*
U.S. Cl. 340—15.5 **5 Claims**

Processes for improving seismic data whereby a plurality of seismograms is standardized to have the same generating

wavelet. A reference seismogram is chosen and its autocorrelation is determined. The crosscorrelation between a first seismogram and the reference seismogram is determined. An operator is computed which transforms the crosscorrelation


43 START
44 OBTAIN A GATHER GROUP OF TRACES
45 CONSTRUCT A REFERENCE TRACE FOR THE GATHER GROUP
46 SELECT TRACE SEGMENTS OF THE REFERENCE TRACE AND THE TRACES IN THE GATHER GROUP
47 COMPUTE OUTPUT WAVEFORM AS THE AUTOCORRELATION OF THE REFERENCE TRACE SEGMENT
48 OBTAIN A CURRENT TRACE IN THE GATHER GROUP
49 COMPUTE INPUT WAVEFORM AS THE CROSSCORRELATION OF THE REFERENCE TRACE AND CURRENT TRACE SEGMENTS
50 COMPUTE INVERSE OPERATOR WHICH WHEN CONVOLVED WITH THE INPUT WAVEFORM APPROXIMATES THE OUTPUT WAVEFORM
51 CONVOLVE THE INVERSE OPERATOR WITH THE CURRENT TRACE TO PRODUCE A PROCESSED TRACE
52 ADD THE PROCESSED TRACE INTO THE SUMMATION TRACE
53 ARE THERE ANY ADDITIONAL TRACES IN THE GATHER GROUP TO PROCESS
YES
NO
54 OUTPUT THE SUMMATION TRACE FOR THE GATHER GROUP
ARE THERE ADDITIONAL GATHER GROUPS TO BE PROCESSED
YES
NO
58 STOP

into the autocorrelation. The first seismogram and the operator are convolved to give the first seismogram the same wavelet as the reference seismogram. Additional seismograms can be standardized by this procedure using the same or a related reference seismogram.

3,622,967

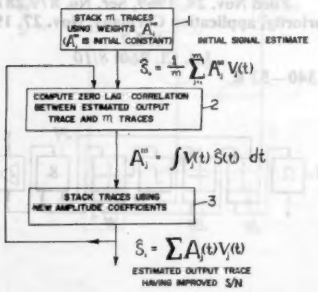
OPTIMUM STACK

Manus R. Foster, Irving, and Raymond L. Sengbush, Austin, both of Tex., assignors to Mobil Oil Corporation

Filed Nov. 7, 1968, Ser. No. 774,152

Int. Cl. G01v *1/28*

U.S. Cl. 340—15.5 MC **8 Claims**


STACK m TRACES USING WEIGHTS A_i^m (A_i^1 IS INITIAL CONSTANT)
INITIAL SIGNAL ESTIMATE
$\hat{S}_1 = \frac{1}{m}\sum_{j=1}^{m} A_j^m V_j(t)$
COMPUTE ZERO LAG CORRELATION BETWEEN ESTIMATED OUTPUT TRACE AND m TRACES
2
$A_i^m = \int V_i(t)\,\hat{S}(t)\,dt$
STACK TRACES USING NEW AMPLITUDE COEFFICIENTS
3
$\hat{S}_1 = \sum A_i(t) V_i(t)$
ESTIMATED OUTPUT TRACE HAVING IMPROVED S/N

Seismic traces are weighted and stacked to produce an estimated output trace having improved signal-to-noise ratio. Those traces having the highest signal-to-noise ratio are weighted more heavily. The weights for each trace are determined from a detection of the signal between the estimated output trace and each of the seismic traces. The procedure is iterated so that the signal-to-noise ratio of the estimated output trace is progressively improved by recomputing the weights of the individual traces on each pass.

3,622,968

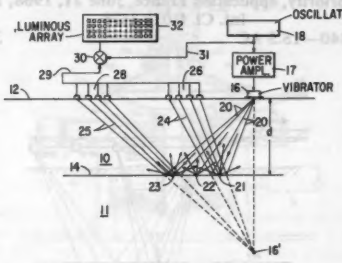
ELASTIC-WAVE HOLOGRAPHY USING REFLECTIONS

Daniel Silverman, Tulsa, Okla., assignor to Amoco Production Company, Tulsa, Okla.

Continuation-in-part of application Ser. No. 735,294, June 17, 1968, and a continuation-in-part of Ser. No. 512,689, Dec. 9, 1965. This application May 15, 1969, Ser. No. 824,925

Int. Cl. G01v *1/28, 1/34*

U.S. Cl. 340—15.5 **4 Claims**



The shape of a reflecting surface within an elastic-wave transmitting medium is determined by an adaptation of holography, by propagating through the medium from a source or source pattern coherent elastic waves that are scattered and reflected by the surface to an areal detector array, the outputs of which combined with a reference wave are recorded as an optical hologram. Reconstructions from the hologram show not only the reflecting surface but a virtual source or source pattern image due to reflections of the real source or pattern by the surface. Virtual source directions or pattern distortions are interpreted in terms of the shape or curvature of the reflecting surface.

3,622,969

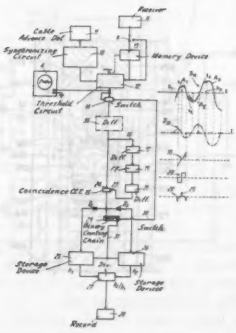
ACOUSTIC METHOD AND DEVICE FOR DETERMINING PERMEABILITY LOGS IN BORE-HOLES

Francisque Lebreton, Paris; Jean-Paul Sarda, Rueil-Malmaison, and Pierre Morlier, Paris, all of France, assignors to Institut Francais du Petrole des Carburants et Lubrifiants, Rueil-Malmaison (Hauts de Seine), France

Continuation-in-part of application Ser. No. 649,725, June 28, 1967, now abandoned. This application June 11, 1969, Ser. No. 834,230

Int. Cl. G01v *1/00*

U.S. Cl. 340—15.5 AC **26 Claims**



A method and device for determining through acoustic techniques the permeability of geological formations adjacent a borehole, wherein sonic wave trains are sequentially emitted into the formations from a source moving through the borehole to different depths and the wave trains are received at a detector located in fixed spaced relationship with the source, the received signals being then measured to

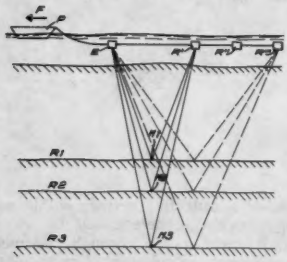
determine the ratio of the intensities of preselected oscillations of the received wave train which is plotted versus depth.

3,622,970

METHOD OF SEISMIC PROSPECTING

Leon Sayous, Pau, and Maurice Barbier, Ousse, both of France, assignors to Societe Anonyme dite Societe National des Petroles D'Aquitaine, Courbevoie, France

Filed June 19, 1969, Ser. No. 834,814
Claims priority, application France, June 21, 1968, 155964
Int. Cl. G01v *1/28*
U.S. Cl. 340—15.5 AC 3 Claims



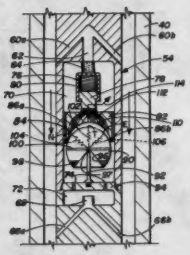
A method of seismic prospecting comprises transmitting into the ground a signal containing a series of discrete energy impulses of the same sign and constant amplitude in which the number of and intervals of time between the pulses are such that when the received signals are intercorrelated with a function of the transmitted signal to determine the travel time of the reflected waves the intercorrelation function of the transmitter signal has correlation residues, the amplitudes of which are less than a given fraction of the maximum amplitude of said intercorrelation function.

3,622,971

METHOD AND APPARATUS FOR SURVEYING THE DIRECTION AND INCLINATION OF A BOREHOLE

Jan J. Arps, Dallas, Tex., assignor to Arps Corporation, Dallas, Tex.

Filed June 30, 1969, Ser. No. 837,700
Int. Cl. 324*/48;* G01v *1/40*
U.S. Cl. 340—18 24 Claims



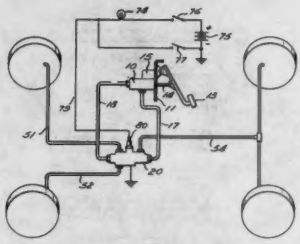
A magnetic reference member is maintained in a stationary position within a drill during drilling operations. The reference member is released in response to temporary cessation of the drilling operations and then seeks a predetermined reference orientation. In response to resumption of drilling operations, the reference member is again clamped in a stationary position and the relative position of the drill with respect to the reference member is detected and transmitted uphole during the drilling operations.

3,622,972

BRAKE FAILURE WARNING PRESSURE SWITCHES

Edward E. Herceg, Lakewood, Ohio, assignor to The Weatherhead Company, Cleveland, Ohio

Filed Feb. 12, 1970, Ser. No. 10,786
Int. Cl. B60q *1/00;* G08b *21/00*
U.S. Cl. 340—52 C 15 Claims



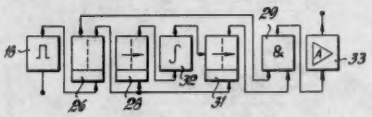
A warning switch is disclosed for continuously actuating an alarm device in response to a momentary fluid pressure unbalance in a dual hydraulic brake system. A piston is slidably disposed in the switch housing for movement in response to a fluid pressure unbalance. A switch contact unit having an insulated terminal and an insulated contact stud is detachably mounted on the switch housing. When the piston is momentarily displaced in response to a momentary fluid pressure unbalance, the terminal is grounded through the contact stud and through the piston to momentarily actuate the alarm device. A latching relay means is disposed within the switch contact unit housing and provides a continuous ground for the terminal in response to the momentary ground provided through the piston. In a first embodiment, the alarm device and the latching relay circuit are arranged in series, and a prove-out switch for testing the alarm device is interposed between the alarm device and the latching relay circuit. In a second embodiment and a third embodiment, the latching relay circuit is arranged in parallel with the alarm device, and an isolation means prevents actuation of the latching relay by the prove-out switch. In the second embodiment this isolation means includes a double pole latching relay, and in the third embodiment this isolation means includes a diode.

3,622,973

WHEEL SLIP DETECTION DEVICE

Helmut H. Domann, Leonberg, and Klaus H. Christ, Stuttgart-Durrlewang, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Nov. 24, 1969, Ser. No. 879,287
Claims priority, application Germany, Nov. 27, 1968, P 18 11 192.7
Int. Cl. B60t *8/10*
U.S. Cl. 340—52 R 13 Claims



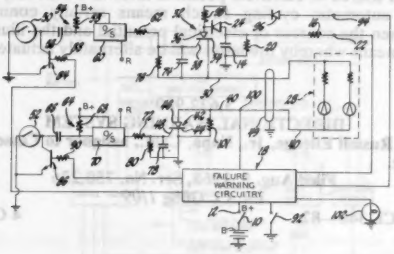
To detect transition from rolling to sliding of a wheel over a surface, a transducer coupled to the wheel provides output pulses having a repetition rate representative of wheel speed. The pulses are applied to a logic circuit including a bistable and a monostable multivibrator. An integrating circuit controls the unstable time of the monostable multivibrator in dependence on pulse repetition rate; sudden change in pulse rate itself is sensed by applying the pulses from the bistable and monostable multivibrators to a coincidence gate which activates a wheel slip detector (and, if desired, an override control to a brake, or accelerating arrangement for the wheel).

3,622,974

AIR CUSHION ACTUATION AND FAILURE WARNING CIRCUIT

Frederick A. Best, Milwaukee; Arden G. Gillund, Oak Creek, and Trevor O. Jones, Milwaukee, all of Wis., assignors to General Motors Corporation, Detroit, Mich.

Filed May 11, 1970, Ser. No. 35,980
Int. Cl. B60r 21/00
U.S. Cl. 340—53 2 Claims



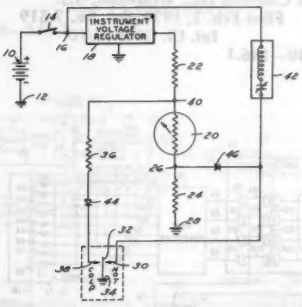
A control circuit for actuating an inflatable air cushion in a motor vehicle including an electrically fired actuator connected between a pair of SCR's which are triggered from respective vehicle deceleration sensors. A storage capacitor is discharged through the SCR's and actuator upon a deceleration of predetermined magnitude and duration. Failure warning circuitry is provided for simulated operation of the sensors and for detecting the voltage at a junction in the control circuit to determine whether various components of the control circuit are functioning properly, and if not, to provide an indication to the operator of the vehicle.

3,622,975

ENGINE TEMPERATURE-INDICATING APPARATUS

Lawrence J. Vanderberg, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed June 22, 1970, Ser. No. 48,216
Int. Cl. G08b 21/00
U.S. Cl. 340—57 2 Claims



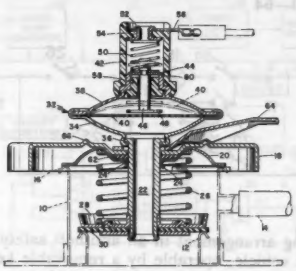
Apparatus for indicating motor vehicle engine or engine coolant temperature is described. The apparatus includes a gauge having movable means for indicating engine temperature, the gauge being operated by an electrical current from a source of electrical power and the indicator position being determined by the amount of current through the gauge. Resistance elements are connected in electrical circuit with the gauge and temperature-responsive switches associated with the engine are provided for selectively connecting and disconnecting the resistances in the gauge circuit. The connection or disconnection of the resistances produce discrete movements of the indicating means.

3,622,976

MALFUNCTION WARNING SYSTEM FOR PRESSURIZED COOLING SYSTEMS

John L. Howard, 12802 N. 23rd St., Phoenix, Ariz.

Filed June 1, 1970, Ser. No. 42,080
Int. Cl. B60q 1/00; G08b 21/00
U.S. Cl. 340—60 6 Claims



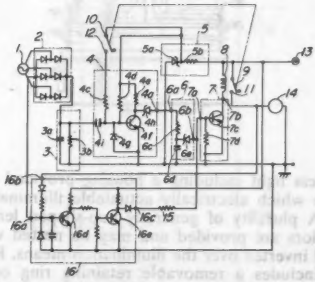
A warning system sensitive to loss of pressure as well as undue temperature rise in cooling systems such as in motor vehicle engines. A capsule with a diaphragm-operated electric circuit control senses the pressure loss and this is conveniently connected in the usual temperature-sensing probe circuit to provide a warning, ordinarily a lighted lamp in the driver's compartment. The pressure-sensing means is incorporated with the radiator cap or independently mounted on the radiator tank by means of a self-tapping nipple which supports the capsule carrying the pressure-sensing diaphragm.

3,622,977

SLIP WARNING SYSTEM FOR AUTOMOTIVE VEHICLES

Hisato Wakamatsu, and Noriyoshi Ando, both of Kariya-shi, Japan

Filed Oct. 8, 1968, Ser. No. 765,902
Claims priority, application Japan, Mar. 30, 1968, 43/21122
Int. Cl. B60t 8/08
U.S. Cl. 340—62 8 Claims

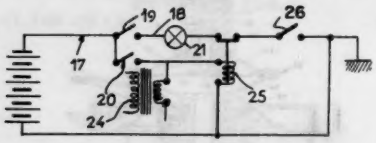


A slip warning system adapted for use in automotive vehicles, which is operative in such a manner that when the angular deceleration of a wheel has reached a set value, an alarm is sounded and at the same time the set value is raised and the alarm is continuously sounded when the wheel has stopped rotating after the angular deceleration of the wheel has reached said set value, and when the wheel has started rotating again upon release of a braking force, the alarm stops sounding.

3,622,978
WARNING ARRANGEMENT IN ANTITHEFT SAFETY LOCKING DEVICE ON AUTOMOTIVE VEHICLES

Paul Lipschutz, Croissy-sur-Seine, France, assignor to Societe d'Exploitation des Brevets Neiman S.A., Neuilly-sur-Seine (Haute de Seine), France

Filed July 30, 1969, Ser. No. 846,048
Claims priority, application France, Aug. 2, 1968, 161606
Int. Cl. B60r *25/04*
U.S. Cl. 340—64 **7 Claims**

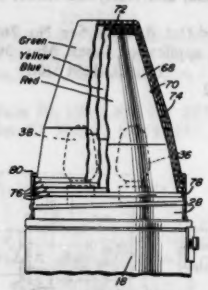


A warning arrangement in an antitheft safety lock on an automotive vehicle, operable by a removable key and comprising switch means engageable by said key upon insertion in its keyhole and normally kept open in the absence of said key, said switch means being caused to close by insertion and remaining of said key into said keyhole and to open upon removal of said key therefrom; and an electric-signalling circuit comprising electrically actuated alarm means connected in series with said switch means and energizable by the closing of said switch means.

3,622,979
DISTRESS LIGHT WITH SELECTIVELY USEABLE COLORED LENSES

Robert P. Dickerson, Hoisington, Kans., assignor to C. H. Carmichael, Hoisington, Kans., a part interest

Filed Sept. 23, 1969, Ser. No. 860,317
Int. Cl. B60q *7/00*; F21l *15/04*
U.S. Cl. 340—81 **3 Claims**



A distress light including a housing provided with a top wall from which electrically actuatable illumination means project. A plurality of generally cup-shaped lenses of different colors are provided and may be nested within each other and inverted over the illumination means. Further, the housing includes a removable retaining ring operative to releasably retain either one or all of the inverted cup-shaped lenses over the illumination means.

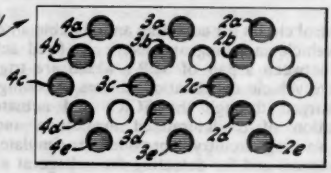
The distress light, while readily useable in many other environments for rendering a visual distress signal, has been specifically designed to provide an assemblage which may be compactly stored in a motor vehicle and utilized by a disabled motorist for signalling caution or requesting various types of aid. The distress light includes a pair of illumination assemblies, one being adapted to receive its power from a motor vehicle storage battery and the other being operable from a self-contained small battery source of electrical potential contained within the housing of the distress light. In this manner, an extremely dependable distress light is provided and it is to be further noted that the distress light is to be marketed with a plurality of different colored lenses for enclosing the illumination means of the distress light. The different color lenses may include a red lens for signalling the need for medical aid, a green lens for signalling a need for police aid, a blue lens for signalling a need for mechanical aid and an amber or yellow lens for signalling "caution" where no assistance is required.

In addition to the above, the illumination means operative from both the associated vehicle battery and the self-contained source of electrical potential include electrically actuated automatic cycling switch means serially connected between the sources of electrical potential and the illumination means whereby the latter will be alternately actuated.

3,622,980
DIRECTIONAL WARNING SYSTEM

Fred Russell Elledge, Jr., Napa, Calif., assignor to Cassell Co. Inc.

Filed Aug. 5, 1968, Ser. No. 750,236
Int. Cl. G08g *1/09*
U.S. Cl. 340—82 **4 Claims**

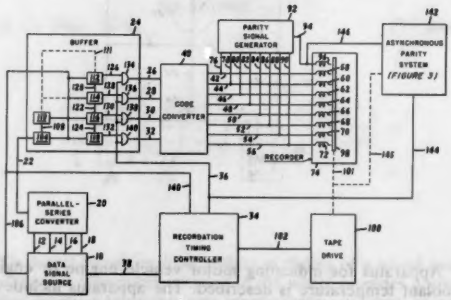


Method and apparatus for directing traffic from a distance in which a plurality of lamps are arranged in two interleaved groups with each group defining at least three arrowheads aligned one behind the other and arrowheads of separate groups being opposed. The lamps of a selected group are sequentially energized.

3,622,981
MAGNETIC TAPE RECORDING SYSTEM AND APPARATUS

Morton M. Greenbaum, New York, N.Y., assignor to Heuristic Concepts Inc., Westwood, N.J.

Filed Feb. 2, 1970, Ser. No. 7,819
Int. Cl. G06f *11/10*
U.S. Cl. 340—146.1 **10 Claims**

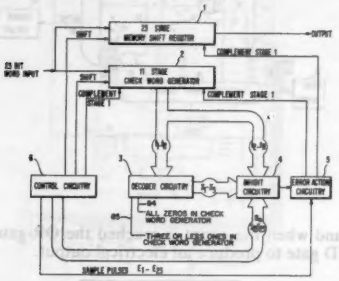


A system providing a computer-compatible record bearing information signals with parity indication therefor and bearing further parity indication in the absence of recorded information signals. Alternately operating apparatus provide such continuous parity indication, one apparatus being responsive to record movement and thus permitting elimination of incremental tape movement apparatus.

3,622,982
METHOD AND APPARATUS FOR TRIPLE ERROR CORRECTION

Bradford S. Clark, Jr., Derwood, and Alexander H. Frey, Jr., Gaithersburg, both of Md., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1969, Ser. No. 803,226
Int. Cl. H04l *1/10*
U.S. Cl. 340—146.1 **8 Claims**

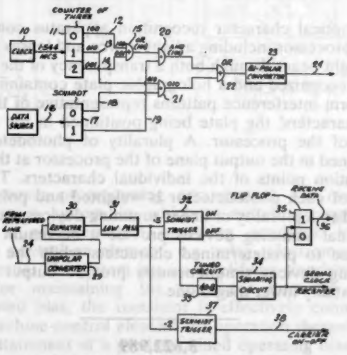


The invention relates to a simplified method for extracting triple error correction information from a (23, 12) Bose-Chaudhuri code which is the Golay code. In a 23-bit word having three or less errors, the method provides correction on a bit-by-bit basis. Each bit is assumed to be in error and corrected, the remaining 22 bits are then interrogated for two or less errors. Also disclosed is the apparatus for extracting the error correction information from the Golay code in a Bose-Chaudhuri code is comprised of a check word generator and shifting means, decoder circuitry, false error indication inhibit circuitry, control circuitry and error action circuitry.

3,622,983
PSEUDODENSITY MODULATION SYSTEM

Jacques V. Deregnaucourt, Ottawa, Ontario, Canada, assignor to Northern Electric Company Limited, Montreal 101, Quebec, Canada

Continuation-in-part of application Ser. No. 579760, Sept. 15, 1966, now abandoned. This application Oct. 10, 1969, Ser. No. 868,281
Int. Cl. G08c *25/00*
U.S. Cl. 340—146.1 **2 Claims**

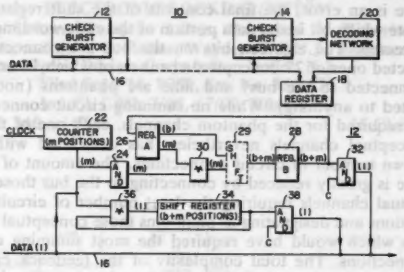


Data at a first bit rate which is to be transmitted on a data line having a much higher bit rate is encoded in a (3, 1) block code which is repeated as many times as necessary to fill all available bits on the data link. This data may be detected at the receiving end of the data link by the use of a low-pass filter, and the data can be reconstituted with very simple equipment.

3,622,984
ERROR CORRECTING SYSTEM AND METHOD

Hal P. Eastman, Del Mar, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 5, 1969, Ser. No. 874,234
Int. Cl. G08c *25/00*; G06f *11/12*
U.S. Cl. 340—146.1 **20 Claims**

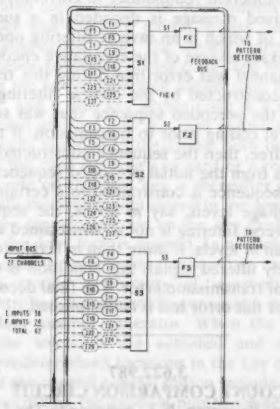


A system and method for detecting and correcting errors in binary data at speeds compatible with modern information storage and retrieval systems in which data to be transmitted or stored is processed to generate a two-part burst of check bits which is then added to the data, the first part of the burst representing a function of the data itself and the second part of the burst representing the position of each "one" bit in the data. Upon reception or readback the data is processed in the same fashion to generate a second burst of check bits which is identical to the first for identical data and which is compared with the first burst to develop a syndrome indicating the presence of any errors and their location. The developed syndrome may be processed to correct errors in the data.

3,622,985
OPTIMUM ERROR-CORRECTING CODE DEVICE FOR PARALLEL-SERIAL TRANSMISSIONS IN SHORTENED CYCLIC CODES

John K. Ayling, Fishkill, and Hua-Tung Lee, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 25, 1969, Ser. No. 879,647
Int. Cl. G06f *11/12*; G08c *25/00*
U.S. Cl. 340—146.1 **7 Claims**



Errors in transmitted shortened cyclic code words are detected and corrected by unusually simple apparatus at a receiver and transmitter connected together by a bus. A 72-bit parallel code word, actually comprising a 64-bit data portion and an eight bit checking portion, is conceptually ex-

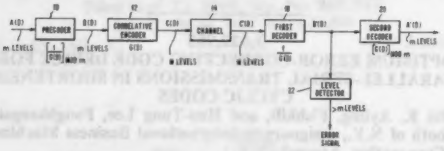
panded and treated as if it were 108 bits long. At both the transmitter and receiver, the word is split into four sequential groups and sent to an eight-position parallel feedback shift register via an 18-bit bus and intermediate circuits. Each bit on the bus is assigned a channel and the register positions are connected to selected channels through summing circuits, and to each other through feedback circuits, of varying complexity. At the transmitter, the final contents of the register are the checking portion of the code word. At the receiver, if there is an error, the final contents of the shift register indicate which bit in the data portion of the code word must be corrected. The eighteen bits on the bus are connected to selected ones of 27 conceptual channels of which 18 are real (connected to the bus) and nine are phantoms (not connected to anything). While no summing circuit connections are required for the phantom channels, each one of the 27 conceptual channels nevertheless has associated with it a known number of circuit connections. The amount of hardware is greatly reduced by connecting to the bus those conceptual channels requiring the least number of circuit connections and designating as phantoms those conceptual channels which would have required the most summing circuit connections. The total complexity of the feedback circuits and associated error location and correction circuits are similarly lessened.

3,622,986

ERROR-DETECTING TECHNIQUE FOR MULTILEVEL PRECODED TRANSMISSION

Donald T. Tang, Yorktown Heights, N.Y., and Hiashi Kobayashi, West Los Angeles, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1969, Ser. No. 889,052
Int. Cl. G06f *11/08*
U.S. Cl. 340—146.1 **5 Claims**



Errors introduced during the transmission of digital sequences that have undergone correlative level coding with initial precoding are detected by a scheme that takes advantage of the inherent redundancy in correlative level coding. The received message is decoded in a succession of steps, the first of which is an inverse filtering operation that performs the exact inverse of the correlative encoding operation. If the channel was error-free during this transmission, the sequence constructed by the inverse filtering process is identical with the precoded sequence that was subjected to correlative level coding prior to transmission. If the channel was not error-free, then the sequence constructed by inverse filtering differs from the initial precoded sequence. Whereas the precoded sequence is constrained to a certain permitted number of voltage levels, say *m* levels, the sequence constructed by inverse filtering is not so constrained and may assume more than *m* levels. If more than *m* levels are occupied by the inversely filtered signal, this condition is detected as an indication of transmission error. The final decoding step is performed after this error test is accomplished.

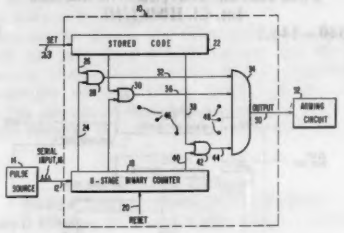
3,622,987

COUNT COMPARISON CIRCUIT

Harold Borkan, Princeton, N.J., assignor to The United States of America as represented by the Department of the Army

Filed May 5, 1969, Ser. No. 821,615
Int. Cl. G06f *7/00*
U.S. Cl. 340—146.2 **9 Claims**

Disclosed is a count comparison circuit for use in artillary fuze timers and the like. The comparison circuit comprises a counting register and a storage register. The complement of the number to be detected is stored in the storage register. OR gates are coupled to the corresponding stages of the registers and when the count is reached the OR gates activate and AND gate to produce an electrical output.

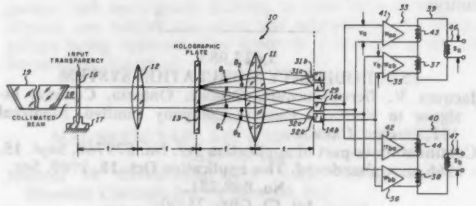


3,622,988

OPTICAL CHARACTER RECOGNITION APPARATUS

Henry John Caulfield, Carlisle, and William T. Maloney, Sudbury, both of Mass., assignors to Sperry Rand Corporation

Filed Sept. 19, 1969, Ser. No. 859,449
Int. Cl. G06k *9/00*
U.S. Cl. 340—146.3 P **14 Claims**



An optical character recognition apparatus comprising a signal processor including a light source and lenses for directing a light beam through both a transparency of the character to be recognized and a holographic plate containing Fourier transform interference patterns representative of the respective characters, the plate being positioned in the frequency plane of the processor. A plurality of photodetectors are positioned in the output plane of the processor at the discrete correlation points of the individual characters. The output signal of each photodetector is weighted and polarized and applied to a plurality of linear summing devices such that the individual summing devices provide a maximum output in response to predetermined characters while the remaining summing devices simultaneously provide output signals of substantially lower magnitude.

3,622,989

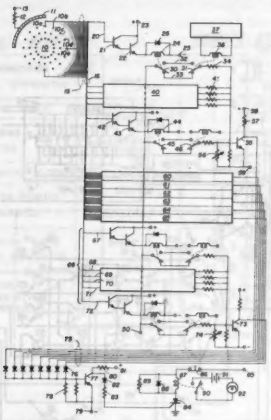
FINGERPRINT IDENTIFICATION

Earl R. Dowdy, Sr., Dallas, Tex., assignor to Carter Craft, Inc., Piano, Tex.

Filed Nov. 28, 1969, Ser. No. 880,712
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 E **5 Claims**

This invention relates to the identification of fingerprints automatically, and more particularly to a system in which conductive contact is made between a finger surface and an

array of electrodes with circuit means for dividing the electrodes into groups and logic means for control of the



response of the system to predetermined combinations of signals from the electrodes.

3,622,990

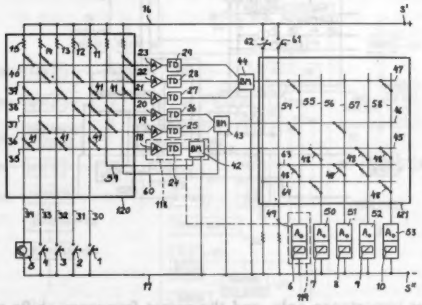
ELECTRONIC PROGRAMMER FOR MACHINE-CONTROL SYSTEMS

Gerhard Lerch, Weilheim, and Egon Penzkofer, Munich, both of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich-Allach, Germany

Continuation-in-part of application Ser. No. 764,153, Oct. 1, 1968. This application Aug. 12, 1969, Ser. No. 851,148

Int. Cl. H04q *9/00*

U.S. Cl. 340—147 R **15 Claims**



An electronic programming arrangement for machine operation in a system in which a switch arrangement represents a predetermined operating condition and is adapted to control an element, e.g. relay, electromagnetic valve or motor. The system has an amplifying transistor and circuitry for maintaining the transistor normally at a predetermined bias; the transistor is effectively connected with the machine-control element for operation thereof only upon the attainment of a predetermined operating bias. The switch arrangement includes a plurality of resistors in circuit with the transistor and the respective switch, each of which must be rendered effective before the transistor initiates the control operation. The switch arrangement may include a set of switch contacts in circuit with a DC source and the resistors in a crossbar array while the transistor operable by each set of switches becomes effective only when all of them have been set in a predetermined condition. The transistor serves as the input to a bistable switch device (e.g. a multivibrator flip-flop), also via a crossbar array, which can operate an output transistor arrangement as part of a switch system with similar crossbar arrays of resistors. A time delay network is provided between each of the transistors and the respective bistable multivibrators. The crossbar arrays are formed on a common printed-circuit plate.

3,622,991

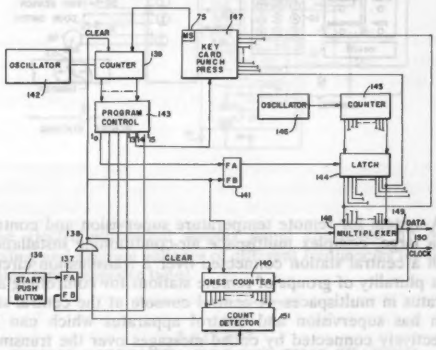
ELECTRONIC LOCKING SYSTEM

Stanley Lehrer, Pompton Lakes; Raymond A. Robertson, Dover, and John C. Holme, Wayne, all of N.J., assignors to Electro-Optics Devices Corporation, Butler, N.J.

Filed Sept. 16, 1969, Ser. No. 858,470

Int. Cl. G06k *7/06, 17/00;* **H04q** *3/02*

U.S. Cl. 340—147 R **25 Claims**

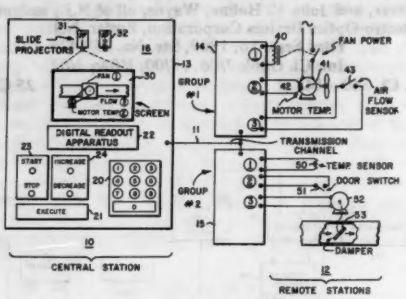


A door lock is opened by a binary-coded key card when inserted in an opening adjacent the lock. The binary access code for the lock is electronically changed for each new registrant to a particular room in a hotel or motel. The lock system includes a central control station and a plurality of substations, each serving a plurality of door units. Means are provided at a central control station for randomly generating a new binary access code, transmitting the access code through logic circuitry to the lock, and for controlling a punch press which produces a new key card containing the newly generated access code. The door control unit includes a card reader and memory circuit means for storing the newly generated access code. The memory circuit means for storing the newly generated access code. The memory circuit means stores the newly generated access code in a room key shift register, and a pass key access code in a pass key shift register. A card inserted into the card reader at the door is photoelectrically scanned to determine both its access code and whether the card is a pass key card or a room key card. The access code on the card key is thereafter electronically compared with the access data stored in the appropriate shift register. When the access code on the key card matches the stored data, the door lock is opened. In a disclosed embodiment, the means for producing the new key card includes a punch press having a plurality of appropriately placed punches controlled by solenoids connected to the output from a random number generator. When the new code is generated, the solenoids are actuated and openings are punched at predetermined locations in the key card. The circuit means at the central control station include master clock means for controlling the random number generating means and the multiplexing means which provide the central control station output data in serial form. Means are also provided for counting the number of binary "one" states in the central control output data. If the number of binary one states is unacceptable, a new access code is generated, whereas if the number of states is acceptable, the program cycle is completed.

3,622,992
SUPERVISION AND CONTROL APPARATUS WITH SELECTIVE DISPLAY

Frank H. W. Schoenwitz, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 15, 1969, Ser. No. 866,459
Int. Cl. H04q *9/00*
U.S. Cl. 340—147 R **8 Claims**



A system for remote temperature supervision and control of a large, complex multispace air-conditioning installation with a central station connected over a transmission circuit to a plurality of groups of remote stations for controlling apparatus in multispaces. A central console at the central station has supervision and control apparatus which can be selectively connected by coded messages over the transmission circuit to any one of the remote stations. The central console has a display means for selectively displaying a schematic showing of the apparatus of any one group of remote stations so that upon sending a coded message to a particular remote group, the particular remote group sends a coded message back to the central console to select a schematic showing of the particular group, whereby further supervision and control can be accomplished from the central console upon referring to the schematic.

3,622,993
DIGITAL COMMUNICATION SYSTEM

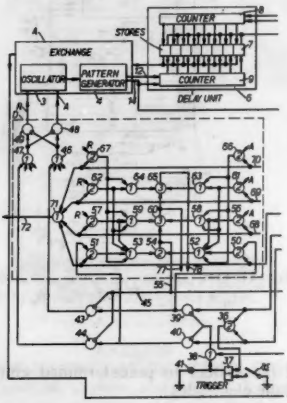
Winston Theodore Duerdoth, Ruislip, England, assignor to The Post Office, London, W. I., England

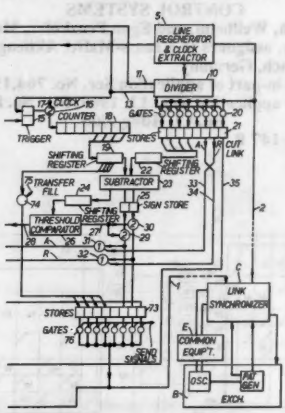
Filed Dec. 15, 1969, Ser. No. 885,000
Claims priority, application Great Britain, Dec. 18, 1968, 60,201/68
Int. Cl. H04j *3/06*
U.S. Cl. 340—147 R **6 Claims**

A digital communication system is described in which the local oscillators of the different switching centers of the system are synchronized by selectively increasing or decreasing the frequencies of the oscillators by preset amounts in response to phase advancing and retarding control signals respectively.

Each switching center includes for each incoming channel an aligner for absorbing phase differences between incoming digits and local digit times as determined by the oscillator. Each switching center includes for each link joining it to another switching center a comparator for comparing the phase differences between incoming digits and local digits in the centers at the ends of the link, the comparator producing a phase advancing or retarding control signal whenever the difference between the phase differences exceeds a threshold value, the sense of the difference determining the type of control signal.

To avoid blocking of the control system due to the simultaneous generation of conflicting control signals in any center the control signals from the different links are progressively inhibited in ascending order of importance of the links whenever the comparators detect excessive differences, until control signals of a single sense only are produced. To minimize the disturbance of the more important switching centers the threshold value above which the control signals are produced are larger links to such centers than for links to centers of lesser importance only, and the preset frequency shifts may be smaller for the more important centers. In any closed loop the threshold value of a direct links between two centers is less than the sum of the threshold values in any series of links joining them.





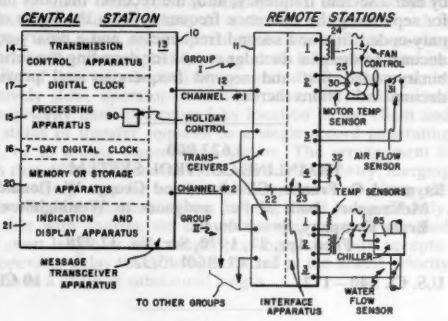
3,622,994
CONTROL AND SUPERVISION SYSTEM HAVING DATA STORAGE

Frank H. W. Schoenwitz, Arlington Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 11, 1970, Ser. No. 10,501
Int. Cl. H04q *5/00, 11/00*
U.S. Cl. 340—152 **10 Claims**

A control and supervision system for controlling and supervising the operation of a building air-conditioning system. A central station and a plurality of remote stations connected by a communication channel, wherein the central station has data associated with the remote stations stored in a memory.

As messages are received from the remote station, a portion of the message can selectively operate the memory apparatus



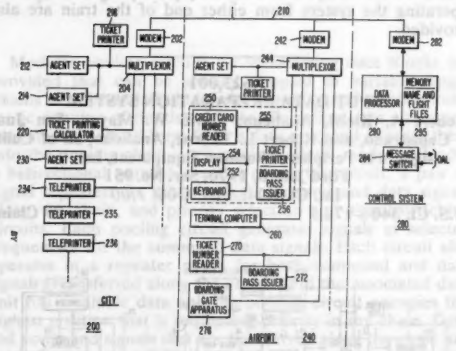
to obtain information from the memory associated with the particular station from which the message originated.

3,622,995

AUTOMATIC TICKET/CREDIT CARD CHECK-IN SYSTEM

Uselma Clarke S. Dilks, Bloomfield Hills, Mich.; James E. Hopkins, Berwyn; Carl W. Marquis, Lionville, and Howard R. Nonken, Downingtown, Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Mar. 21, 1969, Ser. No. 809,277
Int. Cl. G07f 7/02
U.S. Cl. 340—153 **16 Claims**



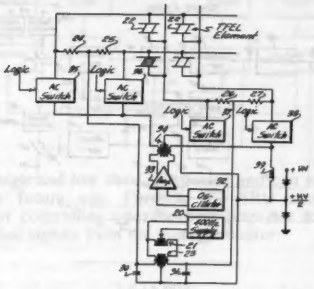
Data processing systems for automatic, on-line checking of numbered reservations and/or the control of credit card purchases, without referencing any data on the ticket or credit card itself. Such systems include a central processor, a remotely addressable central data store for reservation and customer account information, and remote terminal input apparatus, printer apparatus and ticket or card number reader apparatus. The remote terminal input apparatus includes ticket, credit card and freight bill number readers, in addition to keyboard input apparatus for on-line access to numbered reservations or accounts. One such system also includes automatic boarding pass issue apparatus responsive to the central processor system and pass-operated boarding gate apparatus.

3,622,996

ELECTROLUMINESCENT DISPLAY

James L. Bath, New Brighton, and Donald C. McIntyre, Roseville, both of Mich., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 6, 1969, Ser. No. 864,076
Int. Cl. G08b 5/36
U.S. Cl. 340—166 **1 Claim**



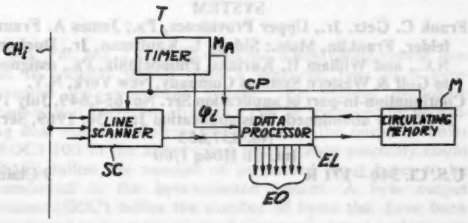
An electroluminescent display panel controlled by AC flooding and exciting voltages of different frequencies for obtaining rapid response times.

3,622,997

SIGNAL DISCRIMINATOR FOR TIME-SHARING COMMUNICATION SYSTEM HAVING PERIODIC LINE SAMPLING

Luigi Casella; Aldo Perna, and Giuseppe Valbonesi, all of Milan, Italy, assignors to Societa Italiana Telecomunicazioni Siemens S.p.A., Milan, Italy

Filed Apr. 20, 1970, Ser. No. 29,781
Claims priority, application Italy, Apr. 18, 1969, 15734A/69
Int. Cl. H04g 3/00
U.S. Cl. 340—167 **6 Claims**

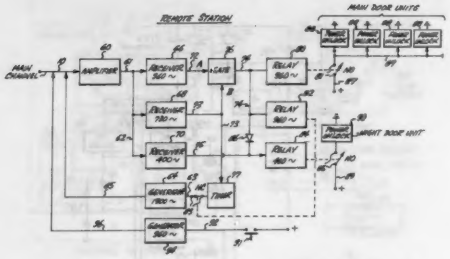


To distinguish between DC pulses of different length detected by periodic sampling of a given transmission line, a data processor evaluates a combination of criteria including the instantaneously sampled line voltage (A), the continuity or lack of continuity of that voltage for a prolonged period (D_e'), and the output of the data processor in a preceding sampling interval. This output is preserved, for subsequent reevaluation, in the form of a digital code stored in a time slot of a circulating memory assigned to the line under test. Some of the output signals of the data processor identify transitory conditions which, in the next evaluation cycle, must be converted into one of two possible definite conditions recognized as significant line-voltage criteria.

3,622,998
REMOTE CONTROL SYSTEM WITH VERIFICATION CAPABILITY

Joe M. Kortman, and Joseph Schulein, both of Vancouver, Wash., assignors to H. Dutton Hayward, Trustee of the Hilda Trusts, Tacoma; Joseph Schulein and Margaret A. Schulein, Vancouver, Wash., part interest to each

Filed Mar. 2, 1970, Ser. No. 15,426
Int. Cl. H04q *9/00*; G08b *5/00*
U.S. Cl. 340—171 R **4 Claims**

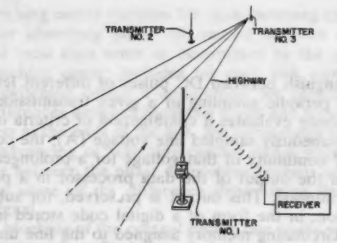


A system for operating actuators, such as electrically operable door locks, at one or more remote stations by means of a control unit at a central station. A lock signal of predetermined frequency is generated upon operation of a lock button on the control unit. The lock signal is supplied to the remote station via a main communication channel to deenergize power units on the doors and permit the spring-loaded door locks to lock. An indicator lamp is provided at the central station to verify the proper locking of the doors upon reception of a return signal from the remote station. To open the doors, an unlock signal of another predetermined frequency is supplied to the remote station via the main communication channel line to energize the power units and overcome the spring forces on the locks. The unlock signal is initiated upon operation of an unlock button on the central station control unit or by operation of an unlock button on a second control unit at the remote station. A signal of a third predetermined frequency is supplied upon operation of a night control button on the central station control unit to open a designated door at the remote station used for authorized night entry.

3,622,999
BINARY-CODED EMERGENCY COMMUNICATION SYSTEM

Frank C. Getz, Jr., Upper Providence, Pa.; James A. Fraunfelder, Franklin, Mass.; Sidney L. Kauffman, Jr., Durham, N.C., and William H. Kurlans, Philadelphia, Pa., assignors to Gulf & Western Systems Company, New York, N.Y.

Continuation-in-part of application Ser. No. 654,649, July 19, 1967, now abandoned. This application June 30, 1969, Ser. No. 837,653
Int. Cl. H04q *1/00*
U.S. Cl. 340—171 R **9 Claims**

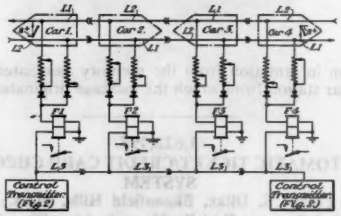


There is provided a binary-coded signal communication system including a plurality of transmitters for transmitting binary-coded frequency signals and a receiver for receiving said binary signals, wherein each of the transmitters includes a means for generating at least one address word and a message word, wherein each word is comprised of a series of binary-coded frequency pulses selected from a first frequency and a second frequency; and, the receiver includes means for separating the reference frequency from the series of binary-coded first and second frequencies, and a binary-coded decimal-to-decimal decoder means for decoding the series of binary-coded first and second frequencies and providing decimal indications thereof.

3,623,000
TRAINLINE CONTROL SYSTEM

Raymond C. Franke, Glenshaw, and George W. Donaldson, McKeesport, both of Pa., assignors to Westinghouse Air Brake Company, Swissvale, Pa.

Filed Apr. 27, 1970, Ser. No. 32,228
Int. Cl. B60l *15/32*
U.S. Cl. 340—172 **10 Claims**

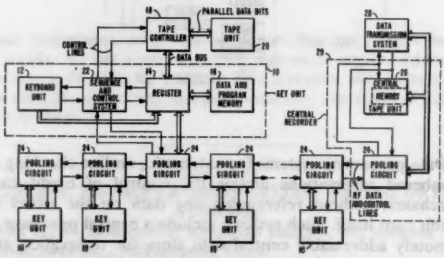


One winding of a differential relay on each car is connected through successively increasing resistors to a constant voltage trainline thus supplying a successively decreasing constant current to each relay. The other winding of each relay is connected to another trainline through which pulses of variable duration are transmitted. By increasing the pulse duration, the controller increases the number of relays which are successively energized as the sum of pulse current plus constant current exceeds each relay pickup valve. Means for operating the system from either end of the train are also provided.

3,623,001
INPUT DATA PREPARATION SYSTEM

Robert A. Kleist, Anaheim; David W. Mayne, San Juan Capistrano, and Robert L. Thorne, Anaheim, all of Calif., assignors to Peripheral Business Equipment, Inc.

Filed Jan. 6, 1970, Ser. No. 951
Int. Cl. H04l *5/00*; G06f *7/00*
U.S. Cl. 340—172.5 **39 Claims**



An input preparation system is provided that can generate a series of data records on a single high-capacity storage member in computer compatible form from a variable number of input stations that may operate in different modes. Each of a number of input data preparation systems includes a key board and a memory for storing at least one block of

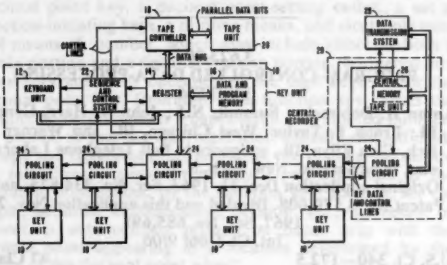
data, and a sequencing control that can govern output transfer of a stored block of data when the unit is employed alone, or accept external command when a number of units are to be used together. The data input systems may comprise keyboard units, magnetic tape units, combinations of these, or other units, such as card systems, that are capable of storing a block of data. In order to combine the data blocks, each input system is coupled to a separate pooling circuit in an intercoupled queuing chain of pooling circuits. Blocks of data may be initially generated asynchronously at relatively slow, operator-controlled rates, and then queued on a priority basis determined by location in the chain and the status of transfer requests to a single-record generating unit, or to a data transmission system. The arrangement is such that different system modes, such as data entry, merging and verifying may be used at different stations along the chain. Each single station may be employed independently, together with appropriate recording equipment, or coupled in a short length or long length pooling chain, with acceptable operator delay times being achieved at the lowest priority station in a chain of substantial length.

3,623,002

DATA-POOLING CIRCUITS

David W. Mayne, San Juan Capistrano, and Alan K. Jennings, Anaheim, both of Calif., assignors to Peripheral Business Equipment, Inc.

Filed Jan. 6, 1970, Ser. No. 968
Int. Cl. H04l 5/00; G06f 7/00
U.S. Cl. 340—172.5 **12 Claims**



Modular pooling circuits for transferring data Blocks are provided that can be serially coupled in variable length chains of substantially indefinite capacity and provide automatic queuing of the data blocks. To utilize data characters provided in parallel form from a data unit, and to enter these into the pooling chain, each pooling circuit module includes a bidirectional parallel-to-serial converter circuit, a pair of signal repeaters for transferring command and data signals along the chain, and priority selection and signal-switching circuits. Each pooling circuit generates signals at selected frequencies for the command data signals. Each circuit also operates in a repeater mode for both command and data signals treansferred along the chain, until the associated data unit has available data and the pooling circuit occupies the highest position that is requesting priority in the chain. Data and command signals that are transferred along the chain are reconstituted, as to timing and waveform, but otherwise transferred without modification. When locally initiated data and command signals are transferred, lower priority units are effectively disconnected from the chain, and higher priority units are effectively disabled until the transfer is complete.

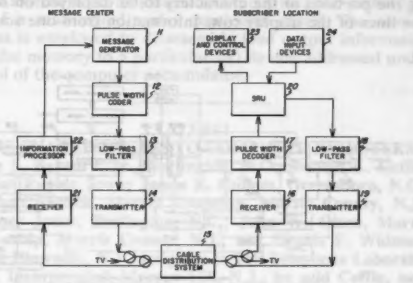
3,623,003

SUBSCRIBER-RESPONSE UNIT

Terry L. Hewitt, Schenectady, N.Y., assignor to General Electric Company

Filed Mar. 3, 1970, Ser. No. 16,085
Int. Cl. H04g 3/00
U.S. Cl. 340—172.5 **13 Claims**

A subscriber response unit (SRU) is disclosed wherein data may be communicated to and from a central control system or message center. The SRU responds only the received data properly address coded for that particular unit. Information entered into the SRU locally is automatically read out to the message center in response to an interrogation signal from the message center. The SRU is able to accept both high and low data input rates and can store information for future use. Further, the SRU can perform switching or controlling operations in response to properly address coded signals from the message center.

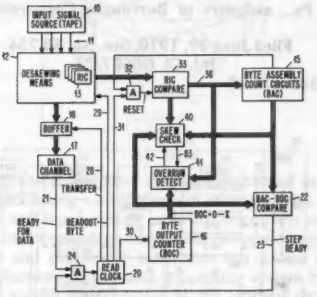


3,623,004

BUFFERING AND TRANSFERRING SIGNALS

John W. Irwin, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 5, 1970, Ser. No. 16,871
Int. Cl. G11b 13/00
U.S. Cl. 340—172.5 **5 Claims**



U.S. Pat. No. 2,921,296 discloses a deskewing system usable to transfer signals from a magnetic tape to a byte-oriented data-processing system. The present disclosure teaches that buffering efficiency can be improved by providing dual output counters, as opposed to the output counter (ROC) 100 in the above-cited patent. Byte assembly count (BAC) tallies the number of assembled input bytes to be transferred to the byte-oriented system. A byte output counter (BOC) tallies the number of bytes that have been transferred to the byte-oriented system. Comparison between the tallies in BAC and BOC causes bytes to be transferred to the byte-oriented system. This arrangement uses the deskewing buffers as byte-oriented buffers.

3,623,005

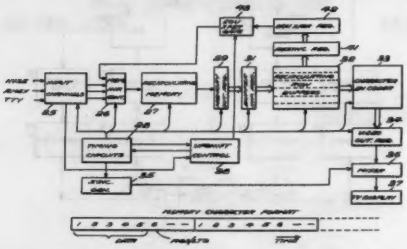
VIDEO DISPLAY APPARATUS EMPLOYING A COMBINATION OF RECIRCULATING BUFFERS

Richardson S. Roberts, Jr., Cherry Hill, N.J., assignor to Ultronic Systems Corp., Mount Laurel, N.J.

Original application Aug. 1, 1967, Ser. No. 657,664. Divided and this application Jan. 20, 1970, Ser. No. 4,207
Int. Cl. G06f 13/00
U.S. Cl. 340—172.5 **5 Claims**

Coded characters from a plurality of input sources are stored in different intervals of a recirculating memory, each

interval containing the characters for a row of the display. Characters for a display row are loaded into buffer register means which is then recirculated and the contents encoded during successive recirculations to produce signals representing the portions of the characters to be displayed on respective lines of the display row. Information from one source is



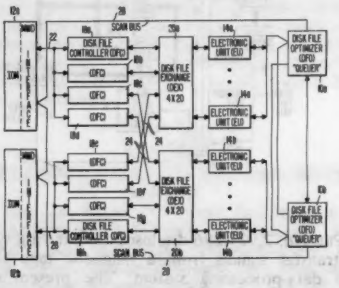
displayed in a plurality of rows which are upshifted to rows thereabove and new information displayed in the bottom row, by delaying the vertical sweep relative to said encoding during upshift. Information from another source is displayed in rows which do not upshift, by delaying the decoding so that it remains unchanged with respect to the vertical sweep.

3,623,006

QUEUEING DEVICE FOR THE SELECTION OF REQUESTS FOR ACCESS TO A STORAGE MEDIUM

George Balakian, Malvern; Murray Klug, King of Prussia; Hans K. Forell, Arcola, and Leo C. Daiuto, West Chester, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed June 29, 1970, Ser. No. 50,734
Int. Cl. G06f 7/22
U.S. Cl. 340—172.5 **22 Claims**



In a data processing system which includes secondary storage media, such as magnetic diyks, the present device, descriptively called a disk file optimizer, stores a list or queue of requests for disk access, and using positional information obtained from the several disks in the secondary storage system, selects the most optimum request for execution based on minimum latency time. The device performs a queueing function and may be termed a "queuer."

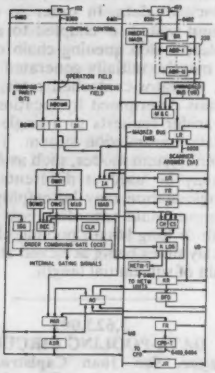
3,623,007

FEEDBACK CONTROL MONITOR FOR STORED PROGRAM DATA PROCESSING SYSTEM

Barry J. Eckhart, Ottawa, Province of Ontario, Canada, and Erna S. Hoover, Summit, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed June 14, 1967, Ser. No. 645,921
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 **17 Claims**

Although it is known that the more urgent tasks which are to be processed by a stored program controlled data processing machine can be accommodated on a real-time basis by controlling the machine to work on these tasks more often, this procedure has not been sufficient to prevent overload during periods of heavy traffic. To assure efficient



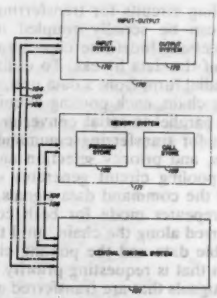
operation, a measure of machine occupancy is periodically obtained and is employed to control the number of new work entries which the machine is allowed to process per unit time interval and per visit to that class of work.

3,623,008

PROGRAM-CONTROLLED DATA-PROCESSING SYSTEM

Anton H. Doblmaier, Summit, N.J.; John A. Harr, Geneva, Ill.; Frank F. Taylor, West Chicago, Ill., and Werner Ulrich, Glen Ellyn, Ill., assignors to Bell Telephone Laboratories, Incorporated, New York, N.Y.

Original application Dec. 31, 1963, Ser. No. 334,875, now Patent No. 3,570,008. Divided and this application Nov. 24, 1967, Ser. No. 685,691
Int. Cl. G06f 9/06
U.S. Cl. 340—172.5 **47 Claims**



A program-controlled data-processing system in which "three-cycle overlap" execution of program instructions is employed. The processor comprises three circuit arrangements which are concurrently operative with respect to three successive program order words. Each order word which is executed by the control arrangement is first brought into one circuit arrangement (the Buffer Order Word Register) and at a discrete time thereafter each instruction is moved to a second circuit arrangement (the Order Word Register). While the order word is in the Buffer Order Word Register, the instruction portion of the order word is decoded by a corresponding decoder circuit (the Buffer Order Word Decoder) and while it resides in the Order Word Register the instruction portion of the order word is decoded by a second decoder, namely, the Order Word Decoder. The third circuit

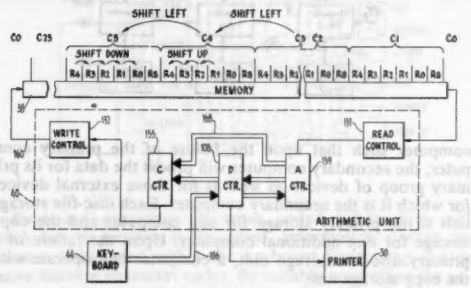
arrangement serves to transmit commands to the program store to obtain a next succeeding order word from the Buffer Order Word Register.

3,623,009

ELECTRONIC PRINTING CALCULATOR

Robert A. Ragen, Hayward, Calif., assignor to The Singer Company

Filed Nov. 18, 1968, Ser. No. 776,583
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **20 Claims**



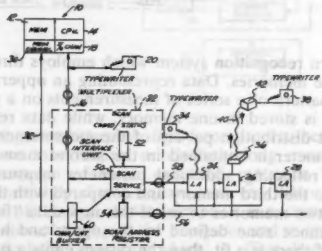
A desk-type calculator having a set of decimal digit keys, a decimal point key, a decimal point-setting switch, a set of function-initiating keys, a printing means, and electronic control means. A number, which may include either or both a whole portion and a decimal fraction portion, is entered into a memory means by operation of the digit keys and/or the decimal point key. Operation of a function key causes the number to be printed on a paper strip. The entered numbers are printed so that the least significant actually entered digits occupy the rightmost print positions; the decimal points are not intentionally aligned vertically. Upon execution of the operation commanded by the function key, such as, for example, addition, multiplication, division, etc., the result, or answer, is automatically printed on paper strip with the decimal point appearing at a location determined by the setting of the decimal point wheel.

3,623,010

INPUT-OUTPUT MULTIPLEXER FOR GENERAL PURPOSE COMPUTER

Kenneth E. Burkhalter, Ann Arbor, Mich., assignor to Information Control Systems, Inc., Ann Arbor, Mich.

Filed May 23, 1969, Ser. No. 827,420
Int. Cl. G06f *9/18*
U.S. Cl. 340—172.5 **8 Claims**



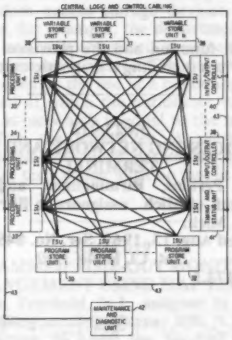
A plurality of input-output devices are serviced by a single general purpose computer on a time-shared basis through a multiplexer which transfers data between the computer and the devices. To enter data to the computer, the multiplexer continually scans the I/O devices and enters data from any which it finds transmitting, to the computer memory, in a manner which accommodates the various data rates and word formats of the devices, employing a direct memory access technique. The multiplexer includes one clock for each different I/O device data rate, the devices are scanned at a substantially higher rate than any of the clocks, and input data is assembled in an assigned memory location under control of a scan signal and a particular clock. The reverse process is employed to disassemble feed output information from the memory to a particular I/O device addressed under control of the computer accumulator.

3,623,011

TIME-SHARED ACCESS TO COMPUTER REGISTERS

Joseph S. Baynard, Jr., Burlington, N.C.; Ronald L. Coffin, Cedar Rapids, Iowa; James E. Cullom, Greensboro, N.C.; Nathan Ehrlich, Morris Township, Morris County, N.J.; Garner Jones, Burlington, N.C.; John W. Olson, Morris Township, Morris County, N.J., and Dennis F. Widman, Lake Hiawatha, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Coffin, said Ehrlich and said Olson and Western Electric Company, Incorporated, New York, N.Y., by said Baynard, said Cullom, said Jones and said Widman

Filed June 25, 1969, Ser. No. 836,241
Int. Cl. G06f *11/00*
U.S. Cl. 340—172.5 **24 Claims**



A multiprocessor computer system is disclosed in which a number of processing units, program storage units, variable storage units and input-output units are selectively combined to form one or more independent data processing systems. A maintenance and diagnostic subsystem has access to all of the critical elements of the data processing system by means of a bussing system independent of the normal data paths. The maintenance and diagnostic subsystem uses this bussing system to test and monitor portions of the data processing system, reading data from and writing data into the various elements, as desired. The bussing system includes time-divided bilateral data links for such data reading and writing.

3,623,012

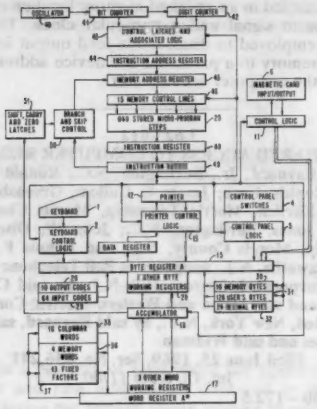
ACCOUNTING SYSTEM WITH PROGRAM BY EXAMPLE FACILITIES

Denis E. Lowry, Lexington, Ky., and William L. McDonald, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1969, Ser. No. 837,757
Int. Cl. G06f *3/12*
U.S. Cl. 340—172.5 **4 Claims**

The accounting system is operator-oriented and includes arithmetic and stored program facilities. The system features entry of program instructions through a "program by example" routine in which the operator enters control (program) information concurrently with the entry of data during conventional typing routines. That is, as the problem is worked, the steps in the operation are stored in program memory. The system is then able to execute the program in a repetitive manner accepting additional keyed-in data, performing calculations, and printing necessary output documents. The system is particularly useful with accounting forms having information arranged in columns. Additional features involve manipulation of column registers, one associated with each

column, the branching techniques, decimal point control, determination of true percentages (Percent Equal), use of



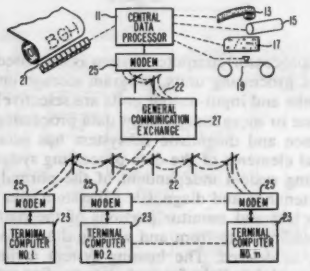
the Alpha Emit function and the provision of various input and output devices including a magnetic card apparatus.

3,623,013

DATA PROCESSING NETWORK AND IMPROVED TERMINAL

Cornelius C. Perkins, Birmingham, and Godfrey Liu, Plymouth, both of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 13, 1969, Ser. No. 849,822
Int. Cl. H04q *3/00*
U.S. Cl. 340—172.5 **10 Claims**



A data processing system having a central or main data processor and a plurality of remote data terminals each having at least one selectively changeable terminal address. The central processor is coupled in a poll-select environment to the various remote terminal processors via a communication link. The respective remote terminals are able to modify the poll-select sequence as set up by the central processor by selectively changing its terminal address for either the poll or select mode. Additionally, groups of the remote terminals may be assigned a selectively changeable group or broadcast address which may be changed either locally at the remote terminal or remotely by the central processor.

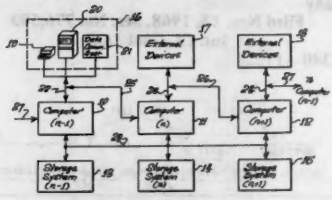
3,623,014

COMPUTER COMMUNICATIONS SYSTEM

Melvin L. Doelz, Corona Del Mar; Robert F. Martin, Orange, and Fred K. Morioka, Tustin, all of Calif., assignors to Control Data Corporation, Santa Ana, Calif.

Filed Aug. 25, 1969, Ser. No. 852,714
Int. Cl. G06f *15/16*
U.S. Cl. 340—172.5 **7 Claims**

A computer controlled, data communications system is provided for transmitting data between a plurality of external devices. The system comprises up to eight, general purpose, digital computers, each with an associated disc-file storage system. The computers and the disc-file storage units are organized such that communication between the computers is made via the disc-file storage associated with each computer, not directly between the computers themselves. Each group of external devices is coupled to a primary and secondary



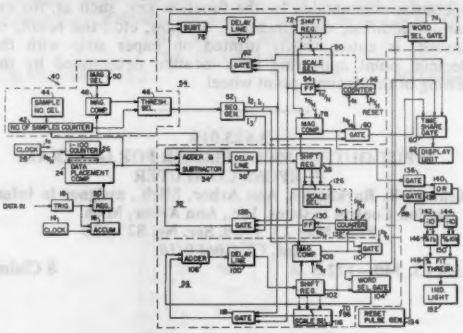
computer such that upon the failure of the primary computer, the secondary computer will process the data for its primary group of devices as well as for those external devices for which it is the secondary computer. Each disc-file storage unit is the primary storage for one computer and the copy storage for one additional computer. Upon the failure of a primary disc-file storage unit, a computer can operate with the copy storage unit.

3,623,015

STATISTICAL PATTERN RECOGNITION SYSTEM WITH CONTINUAL UPDATE OF ACCEPTANCE ZONE LIMITS

Herbert E. Schmitz, Amherst, and Kenneth D. Labaugh, Nashua, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Sept. 29, 1969, Ser. No. 861,668
Int. Cl. G06f *7/02, 15/18*
U.S. Cl. 340—172.5 **17 Claims**



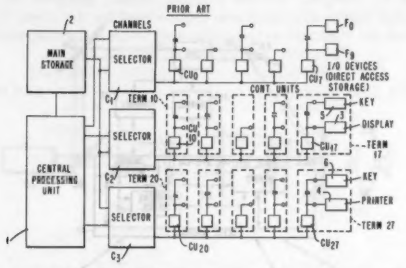
A pattern recognition system which employs three similar addressable memories. Data representing an upper limit distribution pattern of a series of measurements on a particular parameter is stored in one memory, while data reflecting a lower limit distribution pattern of the measurements on the same parameter is contained in the second memory. Then new data reflecting additional parameter measurements is loaded into the third memory and compared with the data in the other two memories to see if this new data "fits" within the acceptance zone defined by the upper and lower limit patterns. If there is a fit, then the system emits a recognition signal which indicates that the additional parameter measurements belong to the same parameter set which established the original upper and lower limit patterns. Following this, the upper and lower limit patterns contained in the first and second memories are updated to include the new data, and then more parameter measurements are made and compared with the updated acceptance zone. This process continues with still more incoming measurement data so that the upper and lower limit patterns are continually modified to accommodate long term changes in the pattern to be recognized.

3,623,016

ELECTRONIC KEYBOARD

Vaughn D. Winkler, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sept. 29, 1969, Ser. No. 861,884
Int. Cl. G08b 29/00; H04l 3/00
U.S. Cl. 340—172.5 10 Claims



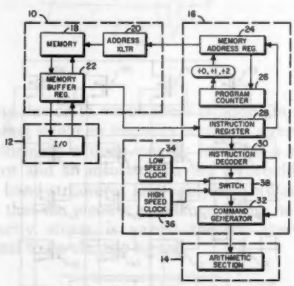
Keyboard providing character coded information with each key depression is described. Information storage apparatus is included within the keyboard for storing one or more discrete character codes. By suitably controlling the access to the stored information, a plurality of multicharacter messages may be obtained with each key depression. The memory may be of the read-write type permitting security control of the data transmitted between the keyboard of a terminal and the central processing unit of a computer. Provision is included in each key for providing an electronic interlock to permit operation in a burst mode.

3,623,017

DUAL CLOCKING ARRANGEMENT FOR A DIGITAL COMPUTER

William P. Lowell, St. Paul, and Harry W. Moore, III, St. Croix Beach, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Oct. 22, 1969, Ser. No. 868,546
Int. Cl. G06f 9/00
U.S. Cl. 340—172.5 4 Claims



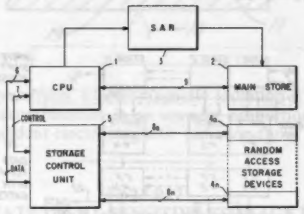
In most general purpose digital computers, there are some instructions that require a relatively long execution time. Some examples of these extended sequence instructions would be multiply, divide, square root, etc. When starting the execution of this type of instruction, it is necessary to interrupt the normal timing of the computer and to implement an "arithmetic hold" condition which, in effect, keeps the computer from fetching a new instruction while the extended sequence instruction is being executed. In the present invention, two 4-phase different-speed clocks are utilized. The pulse repetition rate of the first low-speed clock may be substantially less than that of the second high-speed clock. Suitable control circuits are provided for sensing when an extended sequence-type instruction is involved and for switching in the high-speed clock such that the extended sequence instruction is executed at a higher rate than is a normal instruction.

3,623,018

MECHANISM FOR SEARCHING FOR SELECTED RECORDS IN RANDOM ACCESS STORAGE DEVICES OF A DATA PROCESSING SYSTEM

James R. Evans, Endicott, and John W. Roossien, Binghamton, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 12, 1969, Ser. No. 875,610
Int. Cl. G11b 13/00
U.S. Cl. 340—172.5 5 Claims



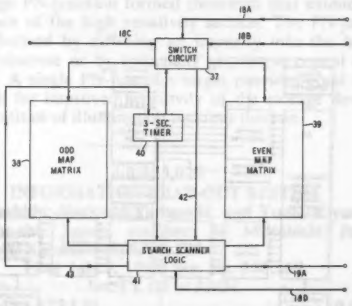
A mechanism is disclosed for making complex record searches in random access storage devices. A plurality of parameter values, for example, the department number, age, years of service, are each compared in succession with upper and lower limit parameter values. The parameter values are found in each record by the use of a beginning address of the byte in the record at which the parameter value begins and by a byte count value which is equal to the number of bytes required to define the parameter. A plurality of logical operators associated with each parameter define combinations of parameter tests which must be met in order to satisfy the search criteria.

3,623,019

PROGRAMMED TIME-OUT MONITORING ARRANGEMENT USING MAP TIMING

George S. Groth, Freehold, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

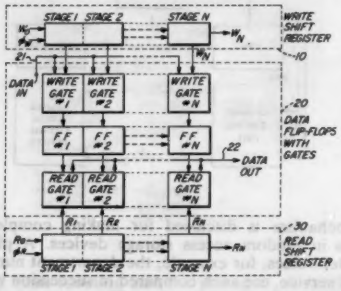
Filed Nov. 26, 1969, Ser. No. 880,277
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 11 Claims



Multiple, multistation, data lines are independently operable when polling the stations on each line to determine their readiness for communication. Each polling interrogation signal applied to a line causes the storage of a line-timing status bit in one of two duplicate memories in a supervising office. Each such memory contains one bit location per data communication line. Upon the occurrence of a station response to the interrogation, the timing status bit for the corresponding line is erased from memory. The two memories are alternately utilized for receiving timing bits during recurrent periods which are equal to a minimum allowable timeout interval for a station. Prior to each such use, a memory is scanned to detect any timing bits persisting therein and thereby indicating a timeout condition on the corresponding line. Such a condition further indicates a need

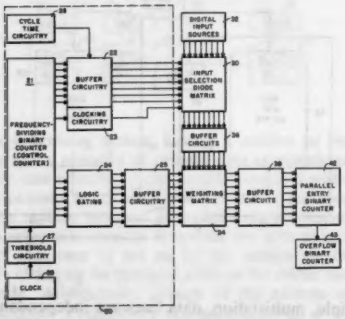
for a special control routine for the timed out station. Both apparatus and program embodiments of the invention are disclosed.

3,623,020
FIRST-IN FIRST-OUT BUFFER REGISTER
Roger Alain Mao, Somerville, N.J., assignor to RCA Corporation
Filed Dec. 8, 1969, Ser. No. 883,181
Int. Cl. G06f 5/06
U.S. Cl. 340—172.5 13 Claims



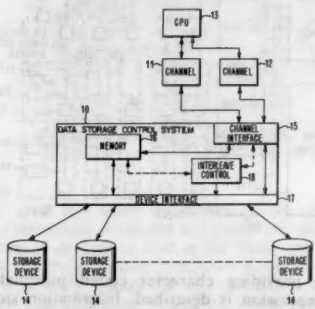
A storage means receives, and stores in separate stages, the bits of serially transmitted digital data. The stored data is read out during the read-in period at a rate which may be equal to or slower than that of the input data and which may start at the time the first bit is received. Output gates coupled to the storage means stages are enabled, one at a time, to read out the stored bits in the same order in which they are received.

3,623,021
DIGITAL WEIGHTING MULTIPLEXER WITH MEMORY
Lawrence B. Haskin, Liverpool, and Samuel M. Korzekwa, Baldwinsville, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy
Filed Dec. 15, 1969, Ser. No. 885,134
Int. Cl. H04j 7/00
U.S. Cl. 340—172.5 2 Claims



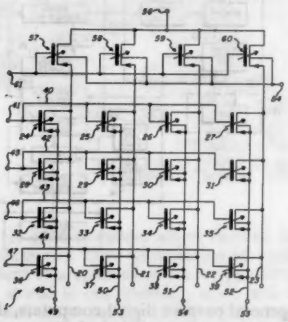
A system which offers a new and improved technique in the realm of multiplexing operations having the capability of scanning large numbers of digital inputs, assigning weights of importance to these inputs and storing the weighted sum in a memory. The present technique is especially signficant in that it is a completely digital operation, eliminating the need for strict specifications on such input parameters as pulse length and amplitude, and it permits the processed result to be stored indefinitely in a counter or until the information is needed.

3,623,022
MULTIPLEXING SYSTEM FOR INTERLEAVING OPERATIONS OF A PROCESSING UNIT
Robert C. Day, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Dec. 29, 1969, Ser. No. 888,482
Int. Cl. G06f 9/18
U.S. Cl. 340—172.5 12 Claims



Apparatus for controlling the operation of a plurality of data storage devices and the transfer of data between the devices and one or more data processing systems. The apparatus includes complete primary and partially duplicative secondary circuitry which responds to certain combinations of instructions from separate sources in the same data processing system or from different data processing systems to selectively run a primary operation at full speed or interleave a primary operation and a secondary operation.

3,623,023
VARIABLE THRESHOLD TRANSISTOR MEMORY USING PULSE COINCIDENT WRITING
Robert E. Oleksiak, Carlisle, Mass., assignor to Sperry Rand Corporation
Filed Dec. 1, 1967, Ser. No. 687,166
Int. Cl. G11c 11/40
U.S. Cl. 340—173 R 6 Claims



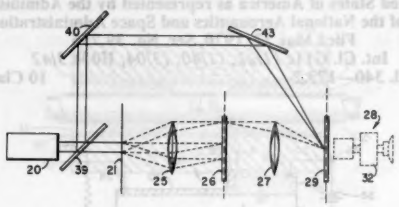
A computer memory utilizing variable threshold transistor memory cells for storing respective digital bit data. Each transistor is characterized by an electrically controllable conduction threshold which is set by the simultaneous application of pulses to the gate electrode and to the substrate, each pulse having half the amplitude required for threshold setting. The gate pulses are square waves centered about zero volts while the substrate pulses are unidirectional and of a polarity representing the binary state into which the memory cell is to be placed. Thus, the memory cells are placed into the ZERO state and the ONE state during respective portions of the writing cycle.

3,623,024

SIGNAL RECOVERY SYSTEM USING OPTICAL MIXING

Dale Leslie Hamilton, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Army

Filed Feb. 9, 1968, Ser. No. 704,456
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LM 24 Claims



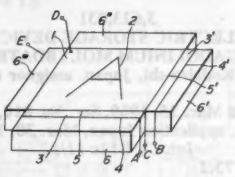
An apparatus for detecting information from a light-responsive storage medium whereby plain parallel monochromatic light is passed through the medium to obtain resultant optical waves which are combined with a reference wave by optical mixing to obtain the desired information output.

3,623,025

VARIABLE RESISTANCE INFORMATION READING ELEMENT

Akio Yamashita, Ikeda-shi, and Takehiro Tsuzaki, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 13, 1968, Ser. No. 752,294
Claims priority, application Japan, Aug. 18, 1967, 42/53366
Int. Cl. G11c *11/34, 13/02*
U.S. Cl. 340—173 R 5 Claims



A recording device in which there is added in accordance with a recording signal an impurity acting as a recombination center and forming a deep energy level to a solid like a semiconductor and an insulator having a forbidden band in their energy band structures and applying an elastic wave to said solid so that the electric resistance in the neighborhood of the impurity atoms is varied thereby converting the recorded signal to an electric signal.

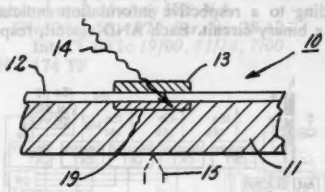
3,623,026

MIS DEVICE AND METHOD FOR STORING INFORMATION AND PROVIDING AN OPTICAL READOUT

William E. Engeler, Scotia, and Marvin Garfinkel, Schenectady, both of N.Y., assignors to General Electric Company

Filed Jan. 21, 1969, Ser. No. 792,488
Int. Cl. G11c *11/34, 11/42;* H01l *17/00*
U.S. Cl. 340—173 LS 13 Claims

An information storing method and a storing device using a conductor-insulator-semiconductor (CIS) structure as a conductor storage element is disclosed within. The CIS structure is initially charged to predetermined voltage. Minority carriers are controllably generated within the semiconductor in proportional response to an information-bearing signal such as electromagnetic radiation flux. The generated minority carriers move to and are stored at the surface of the semiconductor beneath the conductor due to the electric field. The voltage is reversed, injecting the generated minority carriers into the semiconductor where they recombine



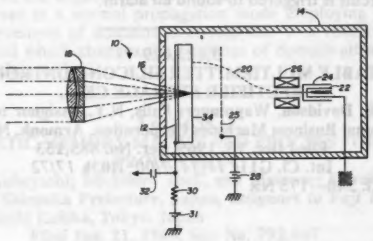
with majority carriers. Electromagnetic radiation is produced during the recombination in an amount proportional to the integrated incident electromagnetic radiation flux.

3,623,027

SOLID-STATE LIGHT-SENSITIVE STORAGE DEVICE

Robert L. Williams, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 3, 1969, Ser. No. 813,186
Int. Cl. G11c *11/34, 11/42*
U.S. Cl. 340—173 LS 12 Claims



A PN-junction target in an information storage system stores an electronic charge pattern that varies in accordance with the quantity of illumination incident thereon. The target comprises a high resistivity semiconductor substrate having a single large PN-junction formed therewith that extends over one surface of the high resistivity section. The PN-junction may be formed by diffusing an impurity into the high-resistivity substrate or by epitaxially growing a crystal on the substrate. A single PN-junction target provides good charge separation for improved sensitivity of the storage device to small quantities of illumination incident thereon.

3,623,028

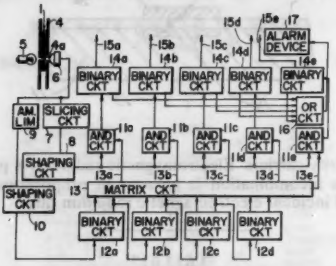
INFORMATION READ-OUT SYSTEM

Muneo Yoshida; Noriyuki Yamauchi, and Yosito Kiyama, all of Kobe-shi, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed July 9, 1969, Ser. No. 840,269
Int. Cl. G11c *13/04*
U.S. Cl. 340—173 LM 9 Claims

An information carrier includes a base carrying information indicia having physical properties differing from those of the base. The indicia are arranged on the base in a manner such that, during a read-out operation, each indicia is detected twice by a detector. The carrier may comprise a circular transparent base having annular indicia thereon, the indicia being either transparent or nontransparent. A slicing circuit and a shaping circuit connected to the detector provide first pulses specific to only those detected indicia of a particular type, such as the transparent indicia. An amplitude limiter and a shaping circuit connected to the detector provide clock pulses corresponding to each of the detected information indicia. The first pulses are supplied as inputs to AND circuits each respective to a particular indicia. The clock pulses are supplied to cascaded binary circuits whose number is equal to one less than the number of information

indicia. A matrix is connected to the outputs of all of the binary circuits, and has respective outputs each connected to a different one of the AND circuits. The outputs of the AND circuits are connected to respective flip-flop circuits each corresponding to a respective information indicia and arranged as a binary circuit. Each AND circuit, responsive to



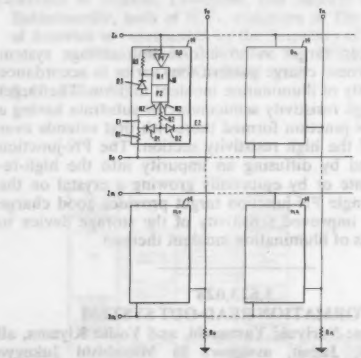
concurrent receipt of a first pulse and a clock pulse, provides a control output signal to a respective flip-flop circuit. Each flip-flop circuit, responsive to receipt, during each output pulse train, of two control output pulses at its input, provides a shift signal at its output. If any flip-flop circuit receives only one control output pulse during each output pulse train, an OR circuit is triggered to sound an alarm.

3,623,029

BISTABLE MULTIEMITTER SILICON-CONTROLLED RECTIFIER STORAGE CELL

Evan E. Davidson, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1969, Ser. No. 885,153
Int. Cl. G11c *11/34, 7/00;* **H03k** *17/72*
U.S. Cl. 340—173 NR **1 Claim**



This specification discloses a storage cell which employs a single dual emitter silicon-controlled rectifying device as a storage element. This silicon-controlled rectifier device is biased to have two stable-operating states and is addressed by a word line connected to one of its emitters and a bit line connected to the other of its emitters. A transistor is formed by these two emitters and the gating layer of the silicon-controlled rectifier. By application of half select pulses to the word and bit lines this transistor is broken down so as to cause current to flow in the gating region or layer of the silicon-controlled rectifier. When current flows in the gating region the operating characteristic of the silicon-controlled rectifier changes so that the silicon-controlled rectifier switches from a high-voltage, low-current stable state to a low-voltage, high-current stable state along the operating curve of the silicon-controlled rectifier.

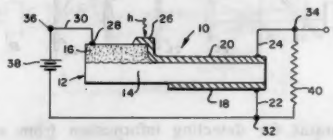
To increase the turnoff speed of the silicon-controlled rectifier a Schottky Barrier diode is connected between the gating layer and the other intermediate layer of the silicon-controlled rectifying device to discharge charge stored in the junction between the two layers.

3,623,030

SEMICONDUCTOR-FERROELECTRIC MEMORY DEVICE

David E. Sawyer, Newton Centre, Mass., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed May 22, 1970, Ser. No. 39,755
Int. Cl. G11c *11/22, 11/40, 13/04;* **H03k** *3/42*
U.S. Cl. 340—173.2 **10 Claims**



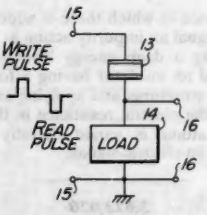
A monolithic, optically written and electrically read ferroelectric memory element employing a single crystal of barium titanate. One portion of the crystal possesses ferroelectric capacitor properties and another portion has been reduced to convert that portion from an insulator materal to an N-type semiconductor. At least one of the capacitor electrodes is transparent and contacts the semiconductor portion to form a Schottky barrier electrode. With the memory element connected in a circuit such that the Schottky diode is reverse biased, the "write" state is achieved by light excitation of the semiconductor portion through the transparent electrode which charges the ferroelectric capacitor portion of the crystal. The device is electrically read by examining the remanent polarization state of the ferroelectric capacitor portion.

3,623,031

FERROELECTRIC STORAGE DEVICE USING GADOLINIUM MOLYBDATE

Akio Kumada, Kodaira-shi, Japan, assignor to Hitachi Ltd., Tokyo, Japan

Filed Mar. 25, 1969, Ser. No. 810,202
Claims priority, application Japan, Mar. 30, 1968, 43/20817
Int. Cl. G11c *11/22*
U.S. Cl. 340—173.2 **5 Claims**



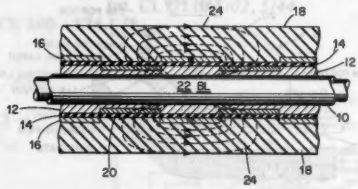
Electrodes for applying a voltage are provided on upper and lower surfaces of a stable irregular ferroelectric body such as $Gd_2(MO_4)_3$ single crystal which strains at the time of polarization reversal and is stable at room temperature or a similar stable irregular ferroelectric body which has a clear threshold voltage for polarization reversal, to compose a memory element and a load element is connected to one of the electrodes in series with said memory element. Read-out or write-in pulses having a voltage sufficient to cause the polarization reversal of said stable irregular ferroelectric body and with a polarity opposite to each other are applied to said memory element and load element from a driving circuit, and the change in the polarization of said memory element when the read-out pulse is applied is read out as a change in voltage across the load element.

3,623,032

KEEPER CONFIGURATION FOR A THIN-FILM MEMORY

Sergiu Schapira, Brookline, Mass., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Feb. 16, 1970, Ser. No. 11,502
Int. Cl. G11b 7/02, 11/14, 5/04
U.S. Cl. 340—174 BC 2 Claims



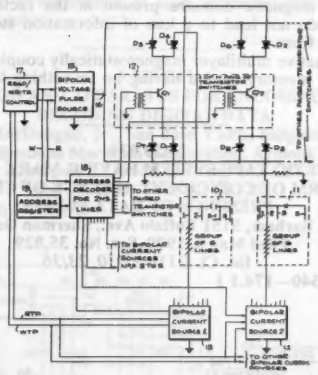
A magnetic memory device has a number of substantially parallel elongated memory elements arranged within a plane and extending transverse to and magnetically coupled with a group of conductors parallel to the plane. The conductors are disposed on a dielectric sheet spaced from the memory elements. A soft layer of magnetic material covers one side of the dielectric sheet. On the opposite side of the dielectric sheet, strips of soft magnetic material are disposed between the conductors. This side of the dielectric sheet is secured to the plane of memory elements.

3,623,033

CROSS-COUPLED BRIDGE CORE MEMORY ADDRESSING SYSTEM

Philip A. Harding, Palos Verdes, Calif., assignor to Electronic Memories and Magnetics Corporation, Los Angeles, Calif.

Filed June 29, 1970, Ser. No. 50,531
Int. Cl. G11c 7/00, 11/06
U.S. Cl. 340—174 TB 10 Claims


READ/WRITE CONTROL
BIPOLAR VOLTAGE PULSE SOURCE
ADDRESS REGISTER
ADDRESS DECODER FOR 2NS LINES
TO OTHER PAIRED TRANSISTOR SWITCHES
GROUP OF S LINES
GROUP OF N LINES
TO BIPOLAR CURRENT SOURCES FOR 2 N S
BIPOLAR CURRENT SOURCE 1
BIPOLAR CURRENT SOURCE 2
TO OTHER BIPOLAR CURRENT SOURCES

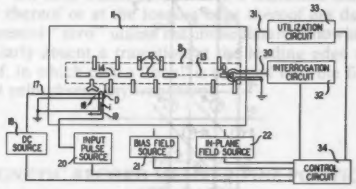
A drive system for a coincident-current magnetic core memory is disclosed which employs a fewer number of transistors to steer drive current of proper polarity through a selected line for read and write cycles. The lines are grouped into 2N groups of S lines, and the groups are associated in pairs. A given pair of groups is cross-coupled to the emitters of one of N pair of transistor switches by diodes, each poled for forward conduction when one of the transistors is activated depending upon both the direction of current flow desired and the group in which the particular line to be driven is. A voltage is applied to the activated transistor of proper polarity for the drive current, and one of S bipolar drive current sources is activated to uniquely drive current through the particular line in the desired direction.

3,623,034

SINGLE WALL DOMAIN FAST TRANSFER CIRCUIT

Peter Istvan Bonyhard, Newark, and Irynej Danylchuk, Morris Plains, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed May 18, 1970, Ser. No. 38,124
Int. Cl. G11c 19/00, 11/14, 7/00
U.S. Cl. 340—174 TF 6 Claims



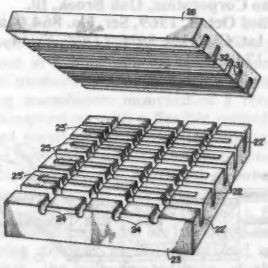
A fast transfer circuit for single wall domains is described. The circuit comprises a succession of recirculating positions defined by magnetically soft overlays. It all the recirculating positions are occupied by domains, any subsequent information introduced to the beginning of the sequence appears at the end of the sequence more quickly than a domain otherwise moves in a normal propagation mode employing overlays. Movement of domains is in response to a rotating in-plane field which changes the positions of domain-attracting poles in the overlay.

3,623,035

MAGNETIC MEMORY MATRIX AND PROCESS FOR ITS PRODUCTION

Seihin Kobayashi; Michihiro Torii, and Masanori Kurahashi, all of Shizuoka Prefecture, Japan, assignors to Fuji Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 21, 1969, Ser. No. 792,447
Claims priority, application Japan, Feb. 2, 1968, 43/6031
Int. Cl. G11c 5/04, 11/02
U.S. Cl. 340—174 BC 7 Claims



A magnetic memory matrix is composed of a plurality of tubes of ferrite material and a magnetic keeper. Depressions on the surface of the keeper hold the ferrite tubes and other depressions define bit areas, the two groups of depressions intersecting at right angles with each other and the depressions of each group being substantially in parallel alignment. Word wires are arranged in parallel lines between those depressions defining bit areas, and a bit wire and a sense wire are threaded through each ferrite tube. The depressions defining the bit areas effectively define the flux paths around the word wires.

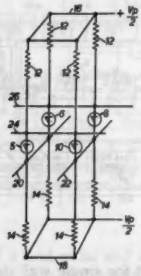
The process for making the magnetic keeper comprises (1) mixing fine fired ferrite particles with an organic binder, i.e. a solution of thermoplastic, (2) pressing and forming a board from the mixture, and (3) forming the two kinds of depressions on the board.

3,623,036

DATA STORAGE ARRANGEMENTS

Donald F. Taylor; Alan Jones, and Bryan L. H. Wilson, all of Ilford, England, assignors to The Plessey Company Limited, Ilford, England

Filed Aug. 27, 1969, Ser. No. 853,273
Int. Cl. G11c 5/02, 11/36, 11/42
U.S. Cl. 340—173 LS 9 Claims



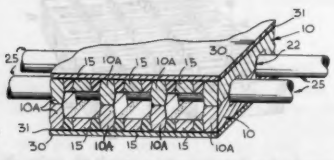
A data storage arrangement is disclosed comprising a plurality of PN diodes fabricated from gallium arsenide or similar material such that each device has a low-voltage/high-current operating state and a low-current/high-voltage operating state and is capable of producing an electroluminescent output only when in the low-voltage/high-current state. The devices are electrically connected in parallel between a power supply which sustains them in their particular states. Coordinate-fashion control connections enable any selected device to be energized so as to switch it into a particular one of its two states according to the data to be stored. Data is read out from any device by momentarily energizing the control connections of that device with a relatively high voltage. If the device is in the low-voltage/high-current state, an electroluminescent output will be produced, but not if the device is in the other state.

3,623,037

BATCH FABRICATED MAGNETIC MEMORY

Howard L. Parks, Woodland Hills, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Filed Oct. 8, 1969, Ser. No. 864,616
Int. Cl. G11c 5/04, 11/04, 11/14
U.S. Cl. 340—174 PW 17 Claims



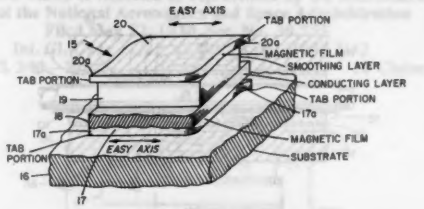
A magnetic wire memory construction comprising a plurality of stacked memory planes, each memory plane being formed from two like-formed self-supporting and rigid metal sheets in opposed relation. The sheets have channels formed therein using precision batch fabricated metal sculpturing techniques, with certain of the channels being filled with insulative material. The dimensions and locations of the channels are chosen so that precisely located memory wire receiving tunnels and corresponding insulated drive line strips perpendicular thereto are formed when the sheets are placed together in opposed relation. Memory wire elements are inserted into the tunnels which protect and shield the elements and maintain them accurately positioned with respect to one another and to the drive line strips so as to permit achieving a memory of increased density and speed of operation.

3,623,038

PHERAL LAYER MAGNETIC THIN FILM ELEMENT

Dennis M. Franklin, Randolph; Richard M. Hornreich, Sudbury, and Harvey Rubinstein, Lynnfield, all of Mass., assignors to GTE Sylvania Incorporated

Filed Dec. 19, 1969, Ser. No. 886,474
Int. Cl. G11c 11/14
U.S. Cl. 340—174 TF 16 Claims



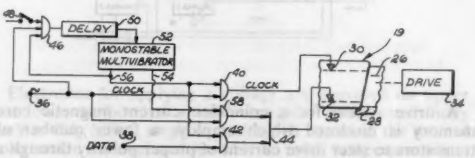
A multilayer magnetostatically coupled thin-film magnetic memory device comprising first and second magnetic films having a conducting layer and a smoothing layer therebetween. Each of the magnetic films includes a pair of small shaped tab portions, one at each end region of the film, for preventing the undesirable formation during normal current disturb conditions of parasitic (or "reverse") magnetic domains in the portions of the films disposed above and below the conducting layer. In a first form of the tab portions in accordance with the invention, the tab portions have a tapered-tip geometry and serve to prevent completely the formation of parasitic magnetic domains anywhere within the magnetic films. In an alternative form of the tab portions in accordance with the invention, the tab portions have a rectangular geometry and parasitic magnetic domains are formed in the magnetic films. However, the parasitic magnetic domains are formed only in the rectangular tab portions and not in the portions of the magnetic films disposed above and below the conducting layer. Since the portions of the magnetic films disposed above and below the conducting layer are the only portions affected by magnetic fields (produced by current flow through the conducting layer), the parasitic magnetic domains present in the rectangular tab portions do not lead to a loss of information stored in the magnetic films.
An alternative multilayer magnetostatically coupled thin-film magnetic memory device having no smoothing layer is also disclosed.

3,623,039

MAGNETIC TAPE SYSTEM HAVING MARK CODE IN THE FORM OF COINCIDENT ABSENCE OF CLOCK AND PRESENCE OF DATA PULSES

James E. Barham, 5151 Buffalo Ave., Sherman Oaks, Calif.

Filed May 8, 1970, Ser. No. 35,829
Int. Cl. G11b 27/30, 23/36
U.S. Cl. 340—174.1 J 10 Claims



A recording system is disclosed for use in conjunction with a recording medium, e.g. magnetic tape, wherein the tape carries at least a clock channel and one data channel, and wherein data is defined in discrete sections along the length of medium. The system locates the sections by "mark" codes which precede each section and are followed by addresses that identify the sections. An absence of signals in the clock channel over a predetermined length of tape is one element

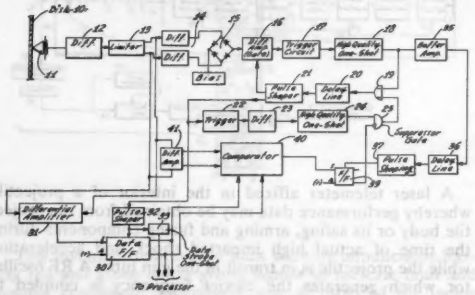
of a "mark" code. The other element is provided by a coincident predetermined code signal in the data channel.

3,623,040

DIGITAL DECODING OF REPRODUCED SIGNALS

Robert W. Erickson, Pacific Palisades, and Harvey R. Fields, Hawthorne, both of Calif., assignors to Scientific Data Systems, Inc., El Segundo, Calif.

Filed June 25, 1969, Ser. No. 836,230
Int. Cl. G11b *5/02, 5/44*
U.S. Cl. 340—174.1 H **21 Claims**



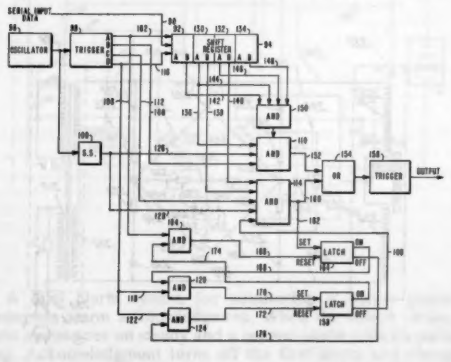
Representation of the particular characteristic which may define a bit cell and clock signal are derived from the readout signal. Depending upon the recording format, the clock pulses and the readout signals are combined to sequentially establish particular states in a bistable device in representation of the bit held within the bit cell currently read out, usually to be held therein until the value of the next bit has been ascertained. The clock pulse generator is under control of temporarily effective rejection and disabling control means which, after each recognition of a clock pulse and bit cell-defining characteristics in the readout signal, rejects for particular periods of time and subsequently thereto recognition of recurrence of such characteristics for clock pulse production.

3,623,041

METHOD AND APPARATUS FOR ENCODING AND DECODING DIGITAL DATA

David L. MacDougall, Jr., San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 22, 1969, Ser. No. 843,522
Int. Cl. G06f *5/00;* **G11b** *5/06*
U.S. Cl. 340—174.1 G **10 Claims**



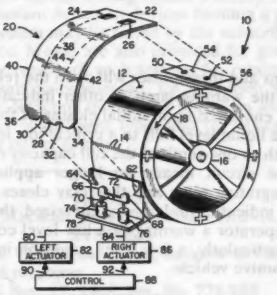
Method and apparatus are disclosed for processing and storage of binary information on a medium having two separately identifiable levels or states and having a plurality of nearly uniform bit cells. Encoding is accomplished by writing a transition between the two states at the center of each bit cell representing a "one" unless the cell is preceded by a "zero one" and followed by a "zero." Transitions are written at the leading edges of bit cells which are to represent a "zero" if there is not a "one" or a "zero" written in the preceding cell or a "one" dropped in the preceding cell. In decoding, the data transitions detected at the centers of bit cells are separated as "ones" while bit cells having a transition at the leading edge thereof are considered to represent "zero." Bit cells which do not have a transition either at the center thereof or at the leading edge thereof are determined to represent "zero" unless the immediately following bit cell is similarly absent a transition at the leading edge or center thereof, in which case a "one" is inserted into the first of the two bit cells absent any transitions.

3,623,042

MAGNETIC RECORD MEMBER FINE POSITIONING APPARATUS

Gary B. Woehler, Minneapolis, and Leroy A. Vos, St. Paul, both of Minn., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Dec. 29, 1969, Ser. No. 888,544
Int. Cl. G11b *5/60, 5/78*
U.S. Cl. 340—174.1 E **10 Claims**



An improved magnetic record member fine positioning apparatus for use in a magnetic memory system is described. The magnetic memory system includes a plurality of reading and recording transducers mounted in a rotatable support member for cooperating with a flexible record member. The flexible record member has a magnetic coating thereon and is maintained out of contact with the rotatable support member by a layer of air. A record member profile correction device is arranged with a record member retaining device for movably retaining one end of a flexible record member. Switchable members are arranged for cooperating with positioning notches in the other end of the flexible record member, the selection of one of the positioning notches cooperating with drag force of the supporting layer of air for accomplishing the fine positioning of the record member.

3,623,043

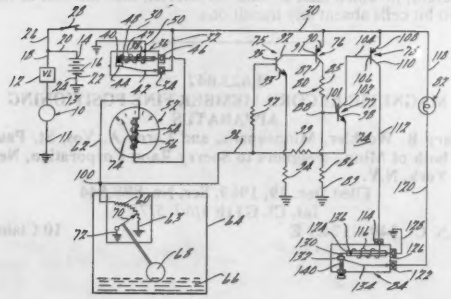
LOW LIQUID LEVEL WARNING SYSTEM

Michael Bozoian, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed July 10, 1969, Ser. No. 840,651
Int. Cl. B60q *1/00*
U.S. Cl. 340—181 **5 Claims**

A low liquid level warning system particularly suitable to give a warning to a vehicle operator of a low liquid level condition in automotive vehicle liquid containers, for example, in the fuel tank of the automobile. The low liquid level warning system is coupled to a conventional liquid level indicating system that is supplied with pulsating electrical energy having

a substantially constant effective voltage value irrespective of the terminal voltage of the charging system of the vehicle and of the source of electrical energy for the vehicle. A solid-state circuit means has an input circuit connected to the liquid-level indicating system and an output circuit connected to the source of electrical energy, i.e., the charging system for the vehicle, and to a pulse-integrating relay. The pulse-integrating relay is normally closed and when in this position energizes a warning indicator or lamp. When the level of the liquid is above a critical low level, pulses of electrical energy are applied to the relay from the solid-state circuit means and these pulses will open the relay thereby extinguishing the warning lamp or other indicating means which has been energized upon initial closing of the ignition switch. When the liquid level falls to a critical low level, for example, one-eighth to one-tenth of the full capacity of a fuel tank, the solid-state circuit means no longer applies pulses to the pulse-integrating relay and the relay closes. As a result, the warning indicator or lamp is energized thereby giving the vehicle operator a warning of a low level condition in a container, particularly, a low level condition in the fuel tank of an automotive vehicle.

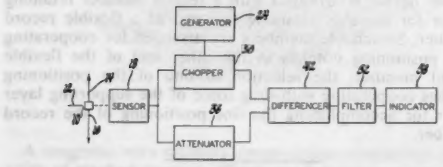


3,623,044

DEMODULATING METHOD AND APPARATUS

Ronald M. Wagner, Greendale, Wis., assignor to General Motors Corporation, Detroit, Mich.

Filed July 28, 1969, Ser. No. 845,139
Int. Cl. G08c *19/02*
U.S. Cl. 340—187 **5 Claims**



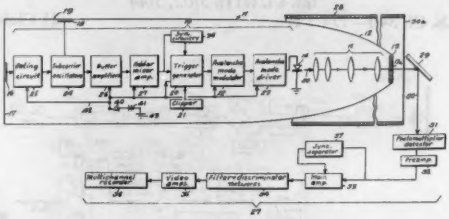
A method and apparatus for provided for producing a DC output signal having a polarity which is indicative of the phase relationship between an AC input signal and an AC reference signal and having an amplitude which is indicative of the amplitude of the AC input signal. The method and apparatus are applied to determine the direction and the magnitude of the displacement of a movable member form a null position.

3,623,045

INTERNAL GUN TUBE BALLISTICS LASER TELEMETER

Lawrence A. Ouellette, Hackettstown, N.J., assignor to The United States of America as represented by the Secretary of the Army

Filed Nov. 23, 1970, Ser. No. 91,895
Int. Cl. G08c *15/04, 19/12*
U.S. Cl. 340—190 **8 Claims**



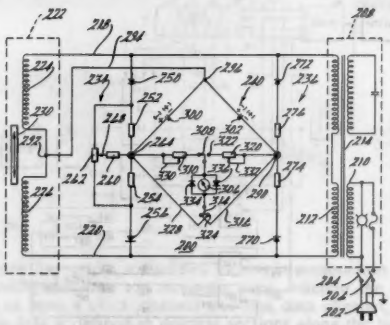
A laser telemeter affixed in the interior of a projectile whereby performance data may be obtained from the projectile body or its safing, arming and fuzing components during the time of actual high imparted shock and acceleration while the projectile is in transit in the gun tube. A RF oscillator which generates the carrier frequency is coupled to modulator means which converts the output of the generator to current pulses whereby the injection diode is current pulsed above the lasing threshold resulting in a constant train of light pulses being emitted therefrom. The light pulses pass through an opening in the nose of the projectile and then down the gun tube to the exterior thereof. Transducers affixed to various areas or components of the projectile respond to the performance of said areas or components to produce electrical signals which are coupled to and frequency modulate related RF subcarrier oscillators. The frequency modulated outputs of the subcarrier oscillators are superimposed on the output of the carrier oscillator. Thus, the light pulses are subsequently frequency modulated providing data indicative of the performance of said areas or components. The modulated light pulses are detected and processed by receiver means which include a photomultiplier, upon which the modulated light pulse impinge, coupled to electronic demodulating circuits and recorders.

3,623,046

TRANSDUCER SYSTEM

George Scourtes, Detroit, Mich., assignor to Cox Instruments Division Lynch Corporation, Detroit, Mich.

Original application Oct. 5, 1965, Ser. No. 494,164, now Patent No. 3,528,288. Divided and this application Nov. 5, 1969, Ser. No. 871,020
Int. Cl. G08c *19/08*
U.S. Cl. 340—199 **8 Claims**



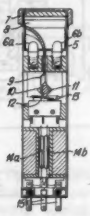
A circuit for energizing a differential inductor transducer uses rectifier voltage dividers in a balanced bridge circuit.

3,623,047

ANNUNCIATOR UNIT

John Stallebrass, 15 Adam and Eve Mews, London, W.8., England

Filed July 8, 1968, Ser. No. 743,163
Claims priority, application Great Britain, July 18, 1967, 32,912/67
Int. Cl. G08b 29/00, 21/00
U.S. Cl. 340—213.1 4 Claims



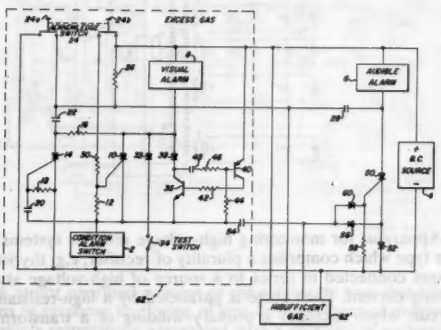
This invention relates to a fault warning annunciator having red and green lamps giving signals to indicate fault and normal conditions respectively, one or other of the lamps being energized at any time. Each lamp operates in an insistent mode until an operator acknowledges the signal by pressing a button switch whereupon the lamp operates in a less insistent acknowledged mode. The button switch is a two-position mechanical switch which changes over the modes of operation of the lamps alternately between conditions in which one lamp is in its insistent mode and the other lamp is in its acknowledged mode and vice versa, whereby when the button switch is pressed to acknowledge a signal from one lamp, the other lamp is automatically reset to operate in its insistent mode when next energized.

3,623,048

CONDITION CHANGE ALARM SYSTEM

Logan D. Haddock, Provo, Utah, assignor to United States Steel Corporation

Filed Mar. 28, 1969, Ser. No. 811,306
Int. Cl. G08b 19/00, 29/00
U.S. Cl. 340—213.1 3 Claims



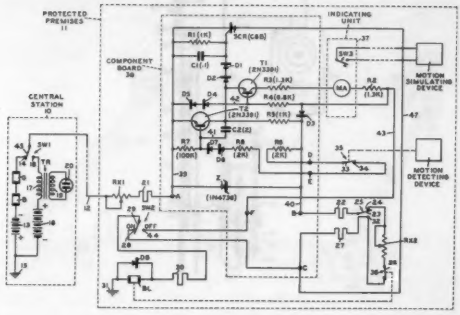
A dual alarm system for monitoring a switch position requiring alarm acknowledgment. When the switch closes, a first alarm goes on steady and a second alarm goes on pulsating. Acknowledgment turns off the first alarm and changes the second alarm from pulsating to steady. When the switch opens, the first alarm again goes on and the second alarm changes to reduced intensity. A second acknowledgment then turns off both alarms.

3,623,049

DIRECT WIRE BURGLAR ALARM SYSTEM PROVIDING SUBSCRIBER TESTING OF MOTION DETECTING DEVICES

Frederick G. Hill, Yonkers, N.Y., assignor to American District Telegraph Company, Jersey City, N.J.

Filed Sept. 12, 1969, Ser. No. 857,450
Int. Cl. G08b 13/00, 29/00
U.S. Cl. 340—214 7 Claims



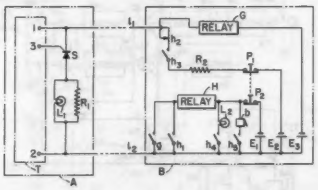
The present invention comprises a direct wire central station burglar alarm system having means whereby the operation of certain motion detection devices forming a portion of the protection system may be tested by the subscriber to the protection service. Means are also provided for giving visual indication of the results of such testing, for retaining alarm signals until intentionally released, for operation with more than one motion detection device, for operation with motion detection devices of different types and for operation with reversed polarity power supply.

3,623,050

ELECTRIC SOURCE DEVICES FOR FIRE ALARM SYSTEMS

Atsuhiro Kojima, Yokohama, Japan, assignor to Nittan Company, Ltd., Tokyo, Japan

Filed Nov. 19, 1968, Ser. No. 776,985
Claims priority, application Japan, Nov. 25, 1967, 42/98666
Int. Cl. G08h 17/12
U.S. Cl. 340—228.1 1 Claim



A fire alarm system uses a detector operated from a regulated voltage supply which maintains the sensitivity of the detector and switches to an unregulated voltage supply whenever a fire is detected to supply the energizing current for audible and visual alarm indicators.

3,623,051

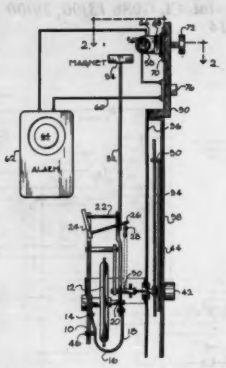
ALARM BAROMETER

Alvin R. Juno, and Jasper R. Pruitt, both of Lubbock, Tex., assignors to Weather Watch Instruments, Lubbock, Tex.

Filed June 12, 1970, Ser. No. 45,714
Int. Cl. G08b 21/00; H01h 35/34
U.S. Cl. 340—236 12 Claims

An aneroid barometer with a U-spring has a magnet on the end of a long arm attached to the U-spring, so that the mag-

net will have greater movement than the U-spring. The magnet is proximate a magnetic-responsive electrical switch which is connected to an alarm having self-contained batteries. The position of the switch may be adjusted so that the alarm is sounded at a predetermined low barometric pressure.

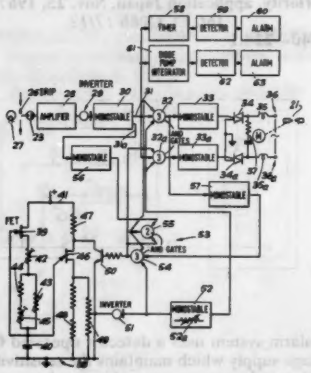


3,623,052

AUTOMATIC INFUSION APPARATUS

Basil Harry Royston Spiller, London, England, assignor to Decca Limited, London, England

Filed Nov. 7, 1969, Ser. No. 874,889
Claims priority, application Great Britain, Dec. 12, 1968, 59,230/68
Int. Cl. G08b *19/00*; A61m *5/16*; G05d *7/00*
U.S. Cl. 340—239 R **11 Claims**



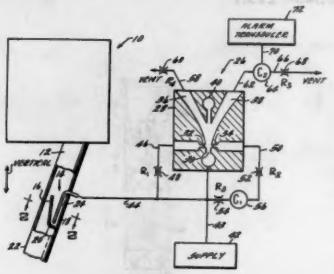
An automatic infusion apparatus in which a timer is started each time a drip of infusion fluid is delivered. A circuit including two AND gates responds to the timer and to a drip detector to determine qualitatively whether the next drip occurs before or after a timing period. Each AND gate triggers a respective monostable timing circuit controlling a motor for altering an adjustable valve to adjust the drip rate by a single increment. The motor is prevented from operating i. the next drip occurs slightly after the timing period.

3,623,053

LEAK-DETECTING APPARATUS

Arthur Stivers Meyer, West Chester, Ohio, assignor to General Electric Company

Filed Oct. 23, 1969, Ser. No. 868,722
Int. Cl. G01f *1/00*
U.S. Cl. 340—242 **4 Claims**



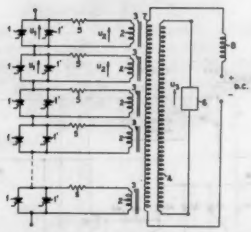
A device for detecting leaks of a predetermined magnitude from fluid-containing apparatus, which device comprises an oversized drain tube skewed with respect to vertical and including a cup defined in part by the tube's lower interior wall so as to collect fluid flowing on the wall. The cup contains a small hole in its bottom surface for drainage. A sensing tube extends into the cup and is connected to switching means for sensing the presence of a predetermined fluid level in the cup and triggering an alarm in response thereto. Fluidic switching means which comprise a digital fluid amplifier are shown.

3,623,054

APPARATUS FOR MONITORING HIGH-VOLTAGE RECTIFIER SYSTEMS

Rolf Wuthrich, Wettingen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Mar. 24, 1969, Ser. No. 809,517
Claims priority, application Switzerland, June 5, 1968, 8309/68
Int. Cl. G08b *21/00*
U.S. Cl. 340—248 E **3 Claims**



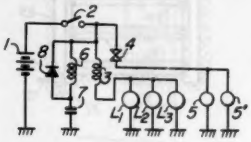
Apparatus for monitoring high-voltage rectifier systems of the type which comprises a plurality of rectifier, e.g. thyristor stages connected in series to a source of high-voltage alternating current. Each stage is paralleled by a high-resistance circuit which includes a primary winding of a transformer wound on a magnetic core which is adjusted to substantially saturation level. A secondary winding linked with and common to all of the cores serves as a voltage-summing device for all of the primary windings and is connected across an indicating device for signifying when and how many of the rectifier stages signifying failed and thus whether or not the rectifier system is safely operational. All of the transformers may be constructed upon a common core which may, for example, have a U-shaped configuration and with the saturable transformer cores in the form of annular members surrounding the legs of the U.

3,623,055

DEVICE FOR INDICATING DISCONNECTION OF LIGHTING MEANS IN AUTOMOBILE

Yasuhiko Sakurai, Kariya-shi, Japan, assignor to Nippon Denso Company Limited, Kariya-shi, Japan

Filed Mar. 7, 1969, Ser. No. 805,127
Claims priority, application Japan, Mar. 11, 1968, 43/8885
Int. Cl. H05b *37/03*
U.S. Cl. 340—251 4 Claims



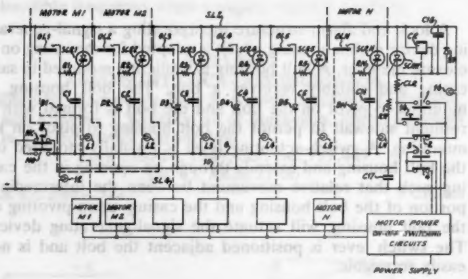
A device for indicating the disconnection of lighting means in an automobile which insures accurate indication in spite of normal lighting load current variations caused by filament temperature changes, operation sequences, etc. The device includes at least one indicator connected to a power source through a normally closed relay contact that is held open by the normal light load current when there are no disconnected or nonfunctioning lights. The relay coil includes a current coil for carrying the load current and a voltage coil connected in series with a capacitor to cumulatively add to the magnetomotive force of the current coil during an initial period when the light circuit is first switched on to thereby insure an initial opening of the normally closed relay contacts even if some of the light load is disconnected or nonfunctional. In this manner, the normal current variations during the initial period of operation do not cause an erroneous malfunction indication but, rather the current in the current coil after the initial time period is effective to cause accurate malfunction indications.

3,623,056

MOTOR OVERLOAD MONITOR

Joel A. B. Elston, Milwaukee, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Aug. 14, 1968, Ser. No. 752,531
Int. Cl. G08b *21/00*
U.S. Cl. 340—253 7 Claims



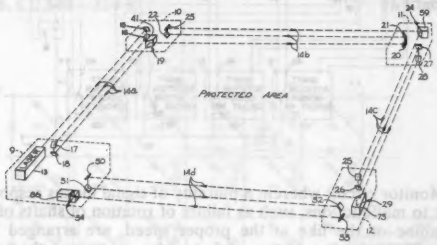
A motor overload monitor of the solid-state type that functions in response to closing of one or more thermal overload contacts respectively associated with a plurality of motors to provide a memory-type lamp indication of each thermal overload condition, and to drop out a power control relay common to the motors with a lamp indication of such power disconnection, and to provide a lamp indication common thereto whenever one or more overload contacts are closed that extinguishes to indicate that all of them have reset. The power control relay can be manually reset only if all overload contacts have reset to open condition and those memory-type lamp indicators can be manually reset whose respectively associated overload contacts have reset to open condition. Use of normally open thermal overload contacts allows disconnection of motors for repair without affecting operability of the rest of the system.

3,623,057

LASER PERIMETER INTRUSION DETECTION SYSTEM

Robert A. Hedin, and Alfiero F. Balzano, both of Los Angeles, Calif., assignors to R. B. Phinizy, Anaheim, Calif.

Filed May 14, 1969, Ser. No. 824,625
Int. Cl. H04q *5/00*; H01j *39/00*; G08b *13/16*
U.S. Cl. 340—258 B 13 Claims



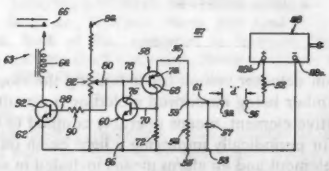
A laser perimeter intrusion detection system which includes means for providing laser beam components for defining the perimeter of a predetermined geographical area to be protected. The system includes a sensing subsystem which is comprised of a plurality of sensors for providing electrical outputs from the sensors, the electrical outputs being responsive to interruption of any of the laser beam components. The system has an electrical signal-processing and logic subsystem for identifying the specific portion of the perimeter controlled by any of the laser beam components when the particular component is traversed by an intruder. Included are means for chopper-modulating the laser beam to increase the difficulty of compromising the system and to make the laser beam invisible to the human eye.

3,623,058

SHEET-SENSING APPARATUS

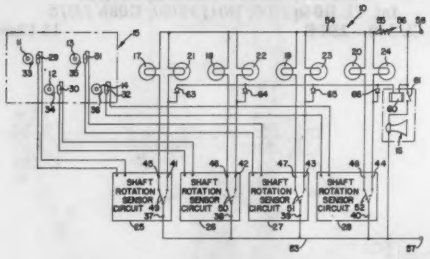
William R. Maloney, Deerfield, Ill., assignor to Addressograph-Multigraph Corporation, Mount Prospect, Ill.

Filed Nov. 18, 1968, Ser. No. 776,649
Int. Cl. G08b *21/00*
U.S. Cl. 340—259 2 Claims



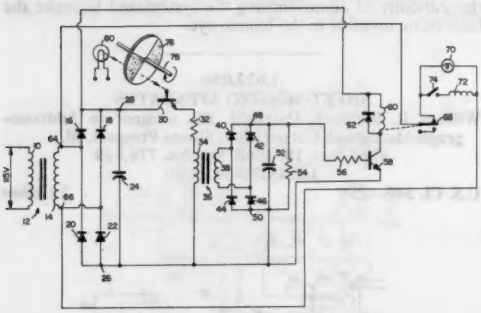
Apparatus for sensing the presence of master sheets or the like in a copying machine, comprising a pair of spaced-apart electrodes connected to a high-voltage source, with a transistor switching circuit coupled thereto. Circuit continuity is completed through an ionized path between the spaced electrodes caused by the high voltage produced thereat. When continuity between the electrodes is maintained, the transistor switching circuit is operated to a first state, but upon passage of a master sheet between the electrodes, current flow between the latter ceases or is reduced to a point whereat the transistor switching circuit is no longer maintained in the first state, and is switched to a second state of operation.

3,623,059
SHAFT MONITOR CIRCUIT
Calvin P. Rickerd, La Grange Park, Ill., assignor to International Harvester Company, Chicago, Ill.
Filed Nov. 21, 1969, Ser. No. 878,717
Int. Cl. G08b 21/00
U.S. Cl. 340—271 2 Claims


SHAFT ROTATION SENSOR CIRCUIT 44
SHAFT ROTATION SENSOR CIRCUIT 50
SHAFT ROTATION SENSOR CIRCUIT 51
SHAFT ROTATION SENSOR CIRCUIT 52

Monitor circuit wherein a plurality of signal means responsive to malfunctions, such as failure of rotation of shafts of a combine or the like at the proper speed, are arranged to energize indicator lamps and to also energize, through unidirectional conduction devices, an alarm means such as a horn. The horn alerts the operator that a shaft is not operating properly and one of the indicator lamps locates the particular shaft.

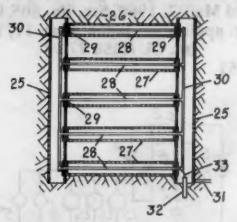
3,623,060
MOTION DETECTOR
Newell G. Welch, Waynesboro, Va., assignor to Acme Visible Records Inc., Crozet, Va.
Filed Jan. 3, 1969, Ser. No. 788,741
Int. Cl. G08b 21/00
U.S. Cl. 340—271 3 Claims



A motion detector system for indicating the stopping of a rotary member being monitored including a circuit having a light-sensitive element, means operably coupled to the rotary member for periodically impinging a light beam on the light-sensitive element and an alarm means included in said circuit operable in response to the removal of the light beam from the light-sensitive element in accordance with the stopping of the rotary member.

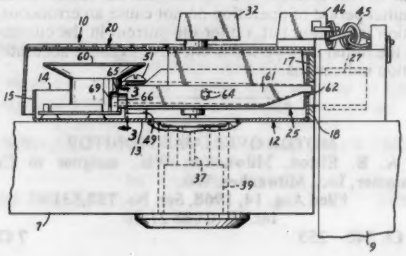
3,623,061
STRUCTURE SECURITY ALARM
Brian Hedley Mayhew, Snelgrove, Ontario; Frank Dezso V. Palmay, Bramalea, Ontario, and Sydney Thomas Wiles, Cooksville, Ontario, all of Canada, assignors to Chubb-Mosler and Taylor Safes Ltd., Brampton, Ontario, Canada
Filed July 24, 1968, Ser. No. 747,392
Int. Cl. G08b 13/26
U.S. Cl. 340—273 4 Claims

A window grill comprises an assembly of tubular metallic grill elements, forming a first capacitor electrode, and a system of interconnected metal rods supported within the grill elements in spaced relation thereto, the rods forming a



second capacitor electrode. Deformation of the grill results in a change of capacitance which may be detected by a capacitance-responsive device.

3,623,062
LOCK ALARM STRUCTURE
Paul Maddison Hawkins, Afton Township, Washington County, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed June 25, 1970, Ser. No. 49,826
Int. Cl. G08b 13/06; E05b 45/00
U.S. Cl. 340—274 4 Claims

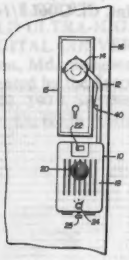


A lock and alarm structure incorporating a signal-generating device within a casing which is adapted for mounting on a closure member. A bolt housing is resiliently mounted in said casing and slidably receives a bolt. The bolt housing is mounted to pivot on the bolt and the bolt is formed with a resilient sidewall to permit the bolt housing to pivot on its mounting. A switch-actuating lever is pivotally mounted on the bolt housing and extends through an opening in the casing such that relative movement between the intermediate portion of the bolt housing and the casing, upon pivoting of the bolt housing, will actuate the signal-generating device. The switch lever is positioned adjacent the bolt and is not easily accessible.

3,623,063
ALARM
John V. Fontaine, 2817 N.E. 26th Court, Fort Lauderdale, Fla.
Filed Oct. 22, 1969, Ser. No. 868,424
Int. Cl. G08b 13/26
U.S. Cl. 340—274 10 Claims

An alarm device in which an oscillator controls the condition of actuating means for a signalling device which provides an alarm signal when the frequency of the oscillator is changed, the device including a conductive suspending handle electrically connected to the oscillator for (a) suspending the device from a conductive doorknob of a door and (b) electrically connecting the oscillator to the doorknob, and a balancer plate for the oscillator to capacitively couple a

reference portion of the oscillator to the door when the device is suspended from the doorknob by the handle,



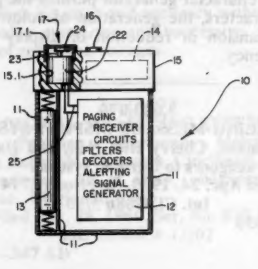
whereby touching of the doorknob changes the frequency of the oscillator to actuate the signalling device.

3,623,064

PAGING RECEIVER HAVING CYCLING ECCENTRIC MASS

Sholly Kagan, East Natick, Mass., assignor to Bell & Howell Company, Chicago, Ill.

Filed Oct. 11, 1968, Ser. No. 766,781
Int. Cl. G08b 7/00
U.S. Cl. 340—311 9 Claims



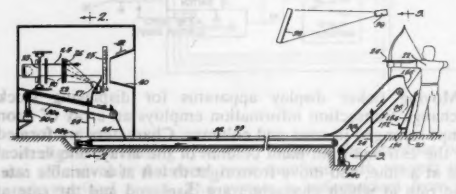
A radio-operated paging receiver is fitted with an electrically driven vibrator which causes the receiver to vibrate at a subaudible frequency when a paging signal is received.

3,623,065

ARROW HIT LOCATION INDICATOR

Gilbert M. Rockwood; Jack A. Russell; Bradford J. Baldwin, and Anthony J. Gratzky, all of Muskegon, Mich., assignors to The Brunswick Corporation

Filed Feb. 14, 1969, Ser. No. 799,447
Int. Cl. A63b 71/06
U.S. Cl. 340—323 9 Claims



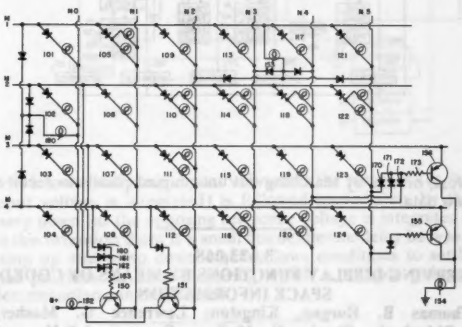
An automatic archery range including a firing line or shooting station from which arrows are fired in a flight path towards a penetrable target, a self ejecting arrow receiving and holding backstop behind the target, an arrow collector beneath the backstop, arrow return means for receiving arrows from the collector and returning them to a quiver adjacent the firing line or shooting station, a target monitor observable by an archer from the shooting station or firing line for indicating to the archer or to spectators where the arrows have hit the target and means for scanning the flight path for sensing the position on the target hit by fired arrows and operating the target monitor.

3,623,066

PROGRAMMABLE LAMP ILLUMINATION DEVICE

William F. Norris, Tulsa, Okla., assignor to Seismograph Service Corporation, Tulsa, Okla.

Filed Dec. 16, 1968, Ser. No. 783,987
Int. Cl. G08b 5/36
U.S. Cl. 340—324 R 11 Claims



A programmable computer for controlling the sequential illumination of a plurality of light sources or lamps. Properly programmed, this unit can produce up to 400 different lighting patterns in a plurality of light sources. Provision is made for illuminating different lamps sequentially and also for including a single lamp in more than one illumination pattern. The computer and the light sources are intended for use as a guide to assemblers of wiring harnesses in the electronics industry. In addition to the above-mentioned illumination control facilities, the computer includes circuitry to aid in tracing out and separating the various wires contained in a multiconductor cable. A set of 40 leads are used to connect the light sources to the computer. Programming is achieved by interposing logic elements between these 40 leads and the light sources.

3,623,067

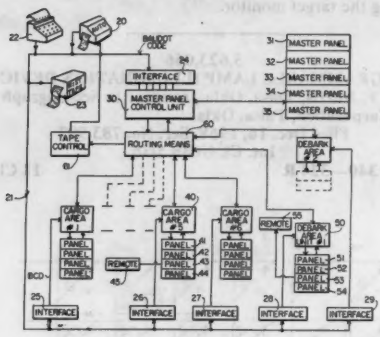
DISPLAY SYSTEM FOR COMMUNICATING DATA AMONG UNITS IN DIVERSE AREAS

Joseph D. Deal, Jr., Newport News, and George A. Taylor, Hampton, both of Va., assignors to Newport News Shipbuilding and Dry Dock Company, Newport News, Va.

Filed Oct. 14, 1969, Ser. No. 866,255
Int. Cl. G06f 3/14
U.S. Cl. 340—324 R 42 Claims

A display system including plural master area display panels and multiple mutually distant display areas all having a number of display panels which can be selectively routed through a trunkline network to become associated with a particular master panel to receive display data. The slave panels retain the address of the associated master panel, and all panels which have been occupied by data relating to a particular transaction can then be decoupled from the display data lines of the network and left to display their data while these same lines are used to transfer data relating to another transaction to other selected panels, there being many available panels in each area. The occupied slave panels though decoupled from the data lines of the network, can still answer back to an associated master panel to indicate status of the transaction via other network lines which are connected in parallel to all master panels and which use the address of the associated master panel to enable the latter's answer back gating means. The system is responsive to encoded-format data and command signals from suitable

input sources which communicate the data to the panels and control its routing either by accessing occupied panels by address, or else by searching out unoccupied panels to receive new data.

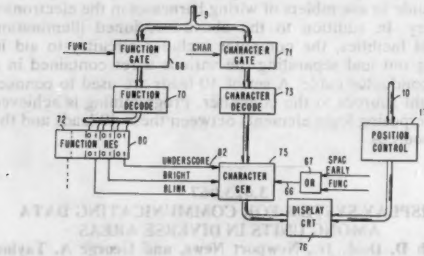


3,623,068

SERVING DISPLAY FUNCTIONS BY MEANS OF CODED SPACE INFORMATION

Thomas B. Horgan, Kingston; Lawrence G. Mosher, Rhinebeck; Charles E. Mullery, Saugerties, N.Y., and Charles E. Newcomb, Norwood, Mass., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 8, 1969, Ser. No. 789,749
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **9 Claims**



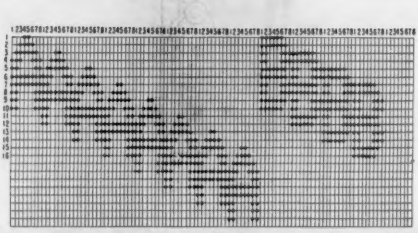
Disclosed is a display system including a regenerative display and a memory where the memory provides the information which is displayed. The memory addresses have a one-for-one correlation with the display addresses. Each word obtained from a memory address is displayed, when it contains a character code, at its corresponding display address. Each word in memory can store a character code defining a character to be displayed or a function code defining a regenerative function to be performed. The function codes are placed in only those memory locations, adjacent locations containing character information, which contain an indication that nothing (i.e., a space) is to be displayed. A control field in each memory word is employed to designate the nature of the particular word stored, that is, to designate whether a function code, character code or some other code is stored in that word. Using control fields allows those words which normally contain only space indications to be beneficially used to contain function codes. The function codes, of course, are decoded in a different manner from the character codes.

3,623,069

MULTIPLEX CHARACTER GENERATOR

Ancile E. Malden, Potomac, Md., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 21, 1969, Ser. No. 878,713
Int. Cl. G06f 3/14
U.S. Cl. 340—324 A **35 Claims**



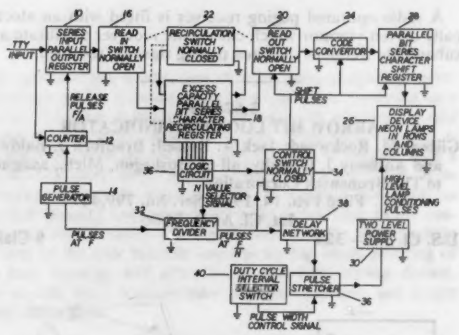
A display system including a symbol generator which consists of a group of segment generators. Each segment generator generates a portion of the symbol to be displayed in time sequence so that the segment generator which generates the first portion of the symbol will be free to generate the first portion of a following symbol or the first portion of a symbol on another display device while the other segment generators are generating the remainder of the first symbol. The outputs from this group of segment generators is transmitted through a group of multiplex gates which assemble the symbols into video data signals for a group of display devices.
The segmented character generator permits the generation of lower case characters, the generation of color symbols and words and expansion or reduction of display cluster sizes with high efficiency.

3,623,070

TRAVELING-MESSAGE DISPLAY SYSTEM

Ronald W. Johnson, Cherry Hill, N.J., and Harry F. Geib, Trevose, Pa., assignors to Ultronic Systems

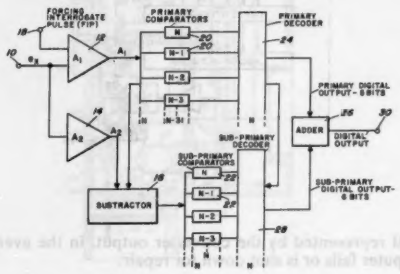
Filed Apr. 24, 1970, Ser. No. 31,714
Int. Cl. G08b 5/36
U.S. Cl. 340—339 **8 Claims**



Moving ticker display apparatus for displaying stock exchange transaction information employs an array of neon lamps arranged in rows and columns. Characters are formed on the extreme right-hand column of the array, one vertical line at a time, and move from right to left at a variable rate. The rate at which characters are displayed and the rate at which information is received normally differs. A recirculating buffer receives incoming information and makes same available for further processing prior to visual presentation by the matrix. At least one stage of the buffer is always empty. A plurality of discretely different speeds are available for advancing the display across the array. The particular speed utilized at any time depends upon the number of stages in the

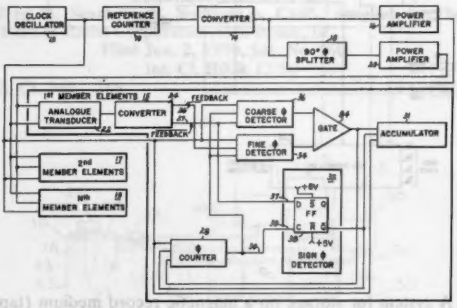
buffer which are filled at the time. Digital speed selector means, responsive to this number, selects the appropriate one of these speeds for use.

3,623,071
FORCED THRESHOLD ULTRA-HIGH-SPEED ANALOG TO DIGITAL CONVERTER
John M. Bentlye, Crofton, Md., assignor to The United States of America as represented by the Secretary of the Navy
Filed Aug. 24, 1970, Ser. No. 66,511
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **6 Claims**



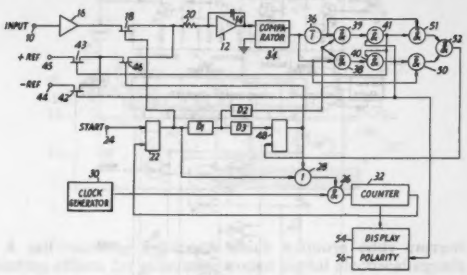
An analog to digital converter that provides conversion in real time at high bit rates and accuracy without the use of a digital to analog converter and successive comparisons or subtractions of reference voltages.

3,623,072
DIGITAL MEASURING SYSTEM
Richard A. Pohlman, Cincinnati; Melvin C. Groth, Maineville; Robert M. Ondercin, Cincinnati, and Thomas J. Doran, Cincinnati, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio
Filed Apr. 28, 1969, Ser. No. 819,569
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **3 Claims**



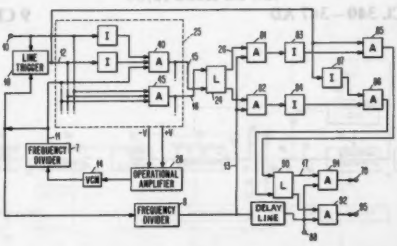
A digital-measuring system to indicate the absolute position of movable members on a machine with respect to a predetermined origin. The system is independent from the driving mechanism of the members and is operable using a single linear or rotary analogue transducer per member. The analogue transducer is excited by a constant frequency signal source. Driving of a member causes the output of a transducer to shift in phase with respect to an initial state of a phase counter. This shift in phase is detected and used to update the phase counter and an accumulator containing the absolute position.

3,623,073
ANALOGUE TO DIGITAL CONVERTERS
Desmond Wheable, and Stephen H. Outram, both of Farnborough, England, assignors to The Solartron Electronic Group Limited, Farnborough, England
Filed May 7, 1969, Ser. No. 822,581
Claims priority, application Great Britain, Dec. 20, 1968, 60,791/68
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 NT **8 Claims**



In known dual ramp digital voltmeters the ramp up (as the input voltage is integrated) is followed immediately by the ramp down (as the opposing reference voltage is integrated). In this invention there is a small but deliberate delay between ramp up and ramp down which allows conditions to settle and provides an interval during which a reliable polarity determination can be effected.

3,623,074
DIGITAL DATA RECOVERY BY WAVELENGTH INTERPRETATION
David L. Bailey, Longmont, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed June 27, 1969, Ser. No. 837,084
Int. Cl. H03k *13/24*; **H04l** *3/00*
U.S. Cl. 340—347 DD **8 Claims**

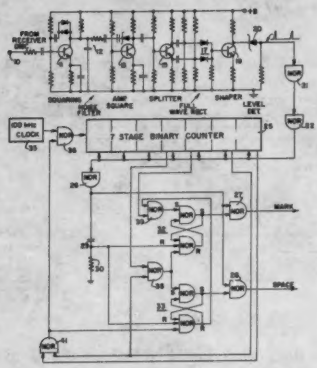


Binary data is recovered from waveforms encoded in phase encoded, double frequency, MFE, MZE, or similar patterns by sensing wavelengths preceding and/or following a transition in the waveform at approximately the center of a bit cell. The gating of "1's" and "0's" from data related clock pulses is switched as a function of that sensing. In one embodiment, wavelengths are interpreted by direct logic to coordinate the switching of the gated "1's" and "0's." In another embodiment, clock pulses are counted into alternately active paths with the outputs of these paths being logically interpreted to control the gating.

3,623,075
ASYNCHRONOUS DATA DECODER
Stephen M. Bench, Rolling Meadows, and Thomas J. Rollins, Arlington Heights, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 16, 1969, Ser. No. 866,999
Int. Cl. H04l *27/24*
U.S. Cl. 340—347 DD **4 Claims**

Digital information to be decoded is transmitted over a voice band transmission medium as a sequence of half-cycles

of tone of different frequencies, with different frequency tones being utilized for mark and space data bits. Only a half-cycle is required for each data bit with a phase reversal occurring at each data bit. The incoming signals are transformed into a sequence of zero crossings with the pulse interval time duration between these zero crossings being compared with a local frequency standard. At the end of each pulse interval, the decision of whether or not a mark or space has been received is determined in accordance with the count stored in a counter driven by the local frequency standard. The counter then is reset, storing a new count during the next half-cycle signal received.

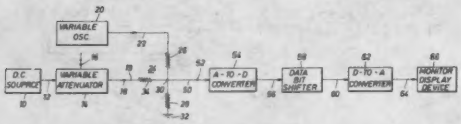


3,623,076

METHOD AND APPARATUS FOR TESTING A-TO-D CONVERTERS

Jerrell F. Moffitt; Algernon S. Badger, and Paul I. Madeley, all of Houston, Tex., assignors to GEO Space Corporation

Filed Sept. 11, 1969, Ser. No. 857,087
Int. Cl. H03k *13/00*
U.S. Cl. 340—347 AD **9 Claims**



A method and apparatus for testing an A-to-D converter by applying to the A-to-D converter a DC test signal whose amplitude is varied and which is modulated by an AC signal. The output digital data from the A-to-D converter is applied to a D-to-A converter and then displayed for monitoring the distortions of the A-to-D converter.

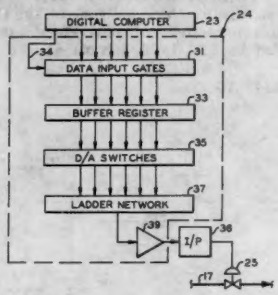
3,623,077

DIGITAL-TO-ANALOG CONVERTER

Vernon R. Clark, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Oct. 20, 1969, Ser. No. 867,543
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **7 Claims**

Isolation transformers are employed to provide direct current isolation of the analog output signal of a digital-to-analog converter from the digital input signals and from the digital computer power supply. The converter contains buffer storage elements, digital-to-analog switches, and a ladder network to retain the last computer output signal indefinitely in case of computer breakdown or failure of the computer power supply. An analog controller can be employed to provide a continuous correction to the last computer control signal represented by the converter output, in the event the computer fails or is shut down for repair.

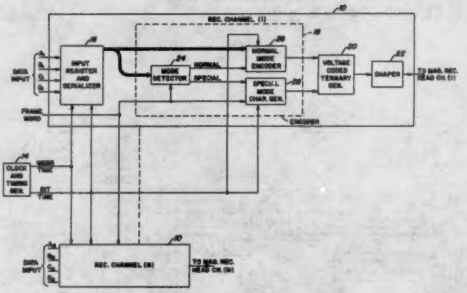


3,623,078

INFORMATION HANDLING SYSTEM ESPECIALLY FOR MAGNETIC RECORDING AND REPRODUCING OF DIGITAL DATA

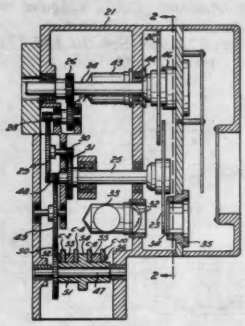
John S. Whiting, Ontario County, N.Y., assignor to General Dynamics Corporation

Filed Nov. 14, 1969, Ser. No. 876,974
Int. Cl. G06f *5/00;* **H03k** *13/24*
U.S. Cl. 340—347 DD **13 Claims**



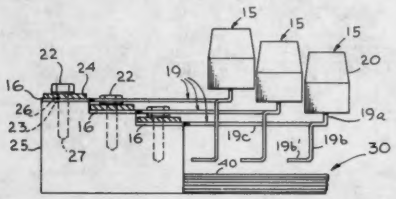
A system for storage on a magnetic record medium (tape or disc) of data with an extremely high packing density is described. Binary input information is encoded into a ternary signal for recording. The ternary signal has spectral properties which facilitate recording with extremely high bit packing density. The ternary signal also contains timing information. On playback the signal is decoded into binary coded ternary form. Timing information with respect to words of ternary data, as well as the individual terts which make up the words, is also derived. The system includes means for synchronizing the reproduced data in accordance with the timing information derived from the data itself, as well as with an external clock, and decodes the data into the original binary form.

3,623,079
PATTERN READING ANALOG-TO-DIGITAL CONVERTER
Ralph H. Schuman, Cleveland, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio
Continuation of application Ser. No. 560,951, June 6, 1966, now abandoned. This application Dec. 8, 1969, Ser. No. 878,986
Int. Cl. G08c 9/06, 9/08
U.S. Cl. 340—347 P 17 Claims



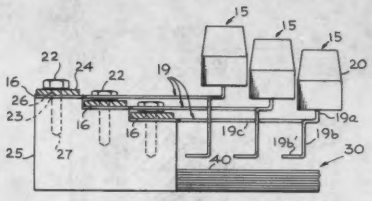
An improved code converter includes a coded information member and signal generators or readers which cooperate therewith to indicate the magnitude of a quantity with a multidigit number to the base 10. The coded information member and signal generators provide signals defining a cyclic code having 20 unique representations for defining a first multidigit binary number indicating the magnitude of a given order digit of the base 10 multidigit number. The magnitude of the binary digit 2° of a second multidigit binary number for indicating the value of the next significant order digit of the base 10 multidigit number is derived from the signals defining the 20 unique representations for the given order digit. Lead and lag reading devices are advantageously controlled in dependency upon the magnitude of the binary digit 2° of the multidigit binary number for indicating the value of the next significant order digit.

3,623,080
SELF-ENCODING KEYBOARD EMPLOYING EDDY CURRENT SHORTING
Alfred D. Scarbrough, Northridge, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Filed Jan. 2, 1970, Ser. No. 160
Int. Cl. H03k 13/00
U.S. Cl. 340—365 21 Claims



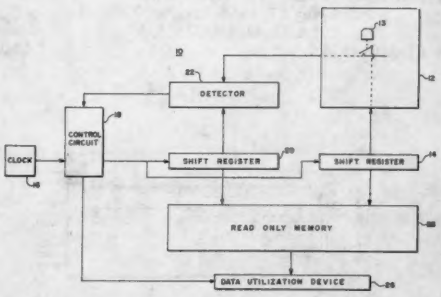
A self-encoding keyboard which employs eddy current shorting effects for generating coded digital electrical signals representative of actuated keys. Each key includes a metal element which upon actuation of the key is brought into close proximity to a corresponding group of stacked printed circuit windings so as to produce an eddy current shorting effect which is detected and used to produce a group of coded digital output signals uniquely representative of the actuated key.

3,623,081
SELF-ENCODING KEYBOARD EMPLOYING EDDY CURRENT SHORTING
Alfred D. Scarbrough, Northridge, Calif., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.
Continuation-in-part of application Ser. No. 160, Jan. 2, 1970. This application Jan. 26, 1970, Ser. No. 5,737
Int. Cl. H03k 13/00
U.S. Cl. 340—365 26 Claims



A self-encoding keyboard which employs eddy current shorting effects for generating coded digital electrical signals representative of actuated keys. Each key includes a metal element which upon actuation of the key is brought into close proximity to a corresponding group of stacked printed circuit windings so as to produce an eddy current shorting effect which is detected and used to produce a group of coded digital output signals uniquely representative of the actuated key. Winding encoding arrangements employing two windings per binary digit as well as a single winding per digit are described.

3,623,082
KEYBOARD ASSEMBLY
Mark S. Stein, Morton Grove; Richard F. Maier, Chicago, Ill., and Robert I. Foster, Bountiful, Utah, assignors to C. P. Clare & Company, Chicago, Ill.
Filed May 27, 1970, Ser. No. 40,829
Int. Cl. G08b 11/00
U.S. Cl. 340—365 17 Claims

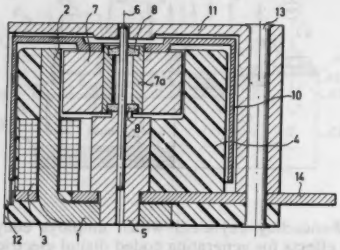


A keyboard assembly for detecting closures in a plurality of switches places in rows and columns to form a matrix or keyboard, each switch representing a distinct data item, includes a signal source continuously operating first and second shift registers in asynchronous relation to each other to provide a distinct register setting for each of the switches. Whenever one of the switches is closed, a control circuit interrupts or arrests the continuous operation of the first and second shift registers in the distinct setting representing the closed switch and shortly thereafter supplies a strobe signal to enable a data utilization device to receive a coded representation of the distinct setting from a read only memory coupled to and controlled by the first and second shift registers.

3,623,083
ELECTROMECHANICAL INDICATING DEVICE

Werner Fessler, Heidelberg, and Heinz Leiber, Leimen, both of Germany, assignors to Teldix G.m.b.H., Heidelberg, Germany

Filed Dec. 5, 1969, Ser. No. 882,595
Claims priority, application Germany, Dec. 6, 1968, P 18 13 121.0
Int. Cl. G08b 5/24
U.S. Cl. 340—366 6 Claims

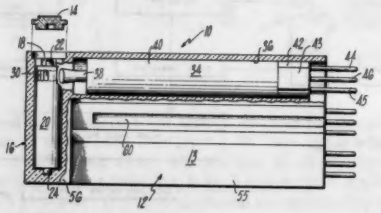


An electromechanical indicating device for selectively displaying a plurality of symbols having a permanent magnet rotor, to which a symbol carrying cover is coupled, which is selectively deflectable to a plurality of discrete angularly spaced positions by selective energization of the excitation coils or windings placed on the pole pieces of the stator which is formed from a single piece of magnetizable material. The axes of the pole pieces of the stator and windings thereon are parallel to the vertical of rotation of the rotor. The symbols are on the vertical outer surface of the cover which has a height substantially greater than the outer periphery thereof divided by the number of symbols thereon. Deflection of the rotor is preferably brought about by selective energization of two or three adjacent windings.

3,623,084
MAGNETIC INDICATOR WITH CAPACITOR CONNECTED COILS

Robert P. McCormick, Broad Brook, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed May 22, 1968, Ser. No. 730,989
Int. Cl. G08b 5/26, 5/30
U.S. Cl. 340—378 1 Claim

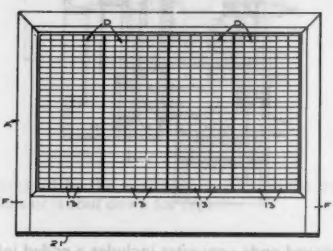


An electromagnetically operated indicator having three parallel rotatably mounted indicating elements which are mounted in side-by-side relationship, which may be independently electromagnetically positioned in each of four equiangularly spaced operating positions and which are marked to collectively indicate each of the sequence of characters of 0 through 9. A viewing window formed to provide convex magnifying lenses for enlarging the viewing angle and for magnifying the forward surface portions of the indicating elements is provided in front of the indicating elements and a pair of rearwardly extending electromagnets is provided for selectively and individually positioning each of the indicating elements in each of its four operating positions. The indicator may be modified to include auxiliary magnetic detents for holding the indicating elements in offset angular positions when the electromagnets are deenergized so as to prevent rotational hangup of the indicating elements when the electromagnetic fields are reversed. Alternative antihangup arrangements include a magnetic shunt between the cores of the electromagnets and means for electrically interconnecting the electromagnets for momentarily energizing the "inactive" electromagnet or operating the "inactive" electromagnet at a lower level when the other electromagnet is energized.

3,623,085
REGISTER BOARD

John J. Hodson, Burlingame, Calif., assignor to Kathryn F. Hodson, San Mateo, Calif., a part interest

Filed May 12, 1969, Ser. No. 823,772
Int. Cl. G08b 5/36
U.S. Cl. 340—381 5 Claims

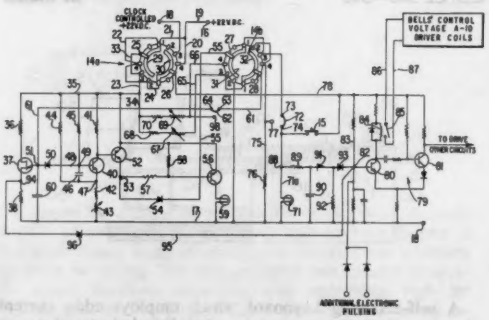


A register board provided with a cabinet having at least one swingable front panel mounted thereon for movement between open and closed position, the panel supporting a series of switches. Each switch has a switch unit carrying an electrical bulb and a translucent lens disposed over the bulb, each lens being selectively depressible to light the bulb therebeneath and each lens being provided with a distinctive indicia. The panel, when swung open, carries all of the switches thereon into exposed position for wiring, servicing and changing of the lenses.

3,623,086
SOLID STATE CONTROL SYSTEM FOR STRIKING BELLS

William R. Cronin, Philadelphia, and Charles F. Marsh, Sellersville, both of Pa., assignors to Schulmerich Manufacturing Co., Sellersville, Pa.

Filed Nov. 6, 1968, Ser. No. 773,841
Int. Cl. G08b 3/00
U.S. Cl. 340—384 E 4 Claims



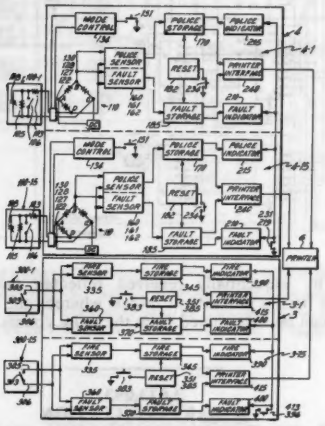
A solid state control system particularly adapted for the striking of bells in which separate circuits operated by a common control provide variable rate and variable symmetry signals for operating a reed-type output switch. Automatic or manual control is provided.

3,623,087

ALARM MONITORING SYSTEM

John H. Gallichotte, Newtown, and Russell L. Terrell, New Milford, both of Conn., assignors to The Mosler Safe Company, Hamilton, Ohio

Filed Nov. 21, 1968, Ser. No. 777,726
Int. Cl. G08b 19/00
U.S. Cl. 340—412 12 Claims



An alarm-monitoring system including a central station having a plurality of fire alarm indicating and control panels and a plurality of security alarm indicating and control panels, each panel having a plurality of zone sections individually responsive to a remote located alarm-condition responsive device or termination unit. Each zone section includes a sensor which generates an alarm signal at the central station when its associated fire or police alarm condition responsive device detects a fire or police alarm condition at its associated remote protected premise. Each zone section also includes an alarm condition storage device for storing the fact that an alarm condition has occurred, and an alarm condition indicator responsive to the storage device for providing an intermittent visual indication when an alarm condition occurs. Each zone section further includes a sensor for detecting circuit faults at its associated alarm condition responsive device or termination unit, a storage device for storing the fact that a circuit fault has occurred, and a circuit fault indicator for providing an intermittent indication of the detection of such a circuit fault. Each fire and security panel includes means for converting an intermittent indicating alarm signal to a continuous indicating signal. The signal-converting means of each panel is common to all zones of the panel. Each of the zones also includes a printer interface capable of generating, each time one of the zone storage devices changes state, a binary signal indicating the nature of the change and the identity of the zone. Associated with all of the panels and common to each of them is a printer which provides, in response to successive changes in the status of the zones, successive printed records reflecting the nature of the status change, the time and date thereof, and the identity of the zone in which the status change occurs.

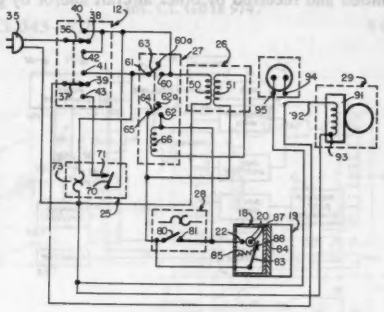
3,623,088

ALARM SYSTEM WITH MANUALLY SELECTABLE TIME DELAY

Ronald C. Peterson, Washington, D.C., assignor to Peterson Design Company, Inc, Washington, D.C.

Filed July 22, 1969, Ser. No. 843,446
Int. Cl. G08b 19/00, 17/00, 13/24
U.S. Cl. 340—420 19 Claims

An alarm system for detecting the presence of either an intruder or a fire, having a general purpose relay connected to a sensing circuit and operative in conjunction with a transformer power supply to energize an alarm either immediately or, in conjunction with a time delay relay, after a predetermined delay period has expired. A selector switch coupled to both the general purpose relay and the time delay controls the system to cause the alarm to be energized either immediately after an intruder (or fire) is sensed or after the termination of the predetermined delay period beginning at the time of entry of the intruder.

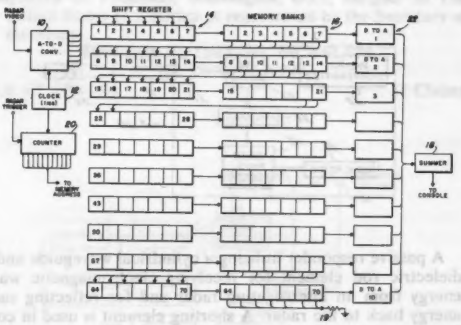


3,623,089

MEANS FOR INTEGRATING SUCCESSIVE RADAR VIDEO SIGNALS IN A COMPUTER

Lewis H. Bossert, El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy

Filed Oct. 8, 1969, Ser. No. 864,720
Int. Cl. G01s 9/02; H04b 1/10
U.S. Cl. 343—5 DP 3 Claims



To improve the signal-to-noise ratio in a radar receiver, a succession of video signals from a fixed source at a given range and azimuth are repeatedly received, each raw signal being sampled and converted to a binary coded number or word of say seven bits, and fed into the first of a series of seven-stage shift registers. Each seven-bit word is shifted into the next register as new information is fed into the first register, the word in the last register being discarded. After each new word is inserted the contents of each register is converted back to its analog value, all analog values being then added together and applied to the display cathode-ray tube.

3,623,090

AIR TRAFFIC CONTROL SYSTEM

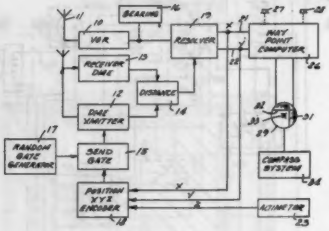
Glen A. Gilbert, Hialeah, Fla., and James Hobbs, Overland Park, Kans., assignors to Butler National Corporation, Minneapolis, Minn.

Filed Nov. 15, 1968, Ser. No. 776,209
Int. Cl. G08g 5/00; G01s 9/02
U.S. Cl. 343—6 9 Claims

An aircraft traffic control system which has a first portion that allows aircraft to detect other aircraft in their vicinity so

that they are aware of them and which also allows an aircraft to maintain a particular spacing with respect to a selected aircraft to alleviate the load on the ground air traffic controllers, is disclosed.

The identification, altitude and coordinates of an aircraft is transmitted and received by other aircraft and/or by ground



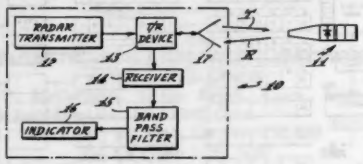
stations to allow other aircraft to be aware of the position of traffic, and the ground stations may utilize the information for local and en route control so that monitoring and control of all aircraft may be maintained throughout the system. Various instrumentations and implementations are disclosed which allow existing facilities to be used with modifications which are simple and relatively inexpensive.

3,623,091

PASSIVE RESPONDER

John J. Mayo, Jr., Lynnfield, and Robert L. Cavanaugh, Wilmington, both of Mass., assignors to Avco Corporation, Cincinnati, Ohio

Filed Jan. 26, 1970, Ser. No. 5,725
Int. Cl. G01s 9/56
U.S. Cl. 343—6.8 R **10 Claims**



A passive responder utilizing a cylindrical waveguide and a dielectric rod element for receiving electromagnetic wave energy from an interrogating radar and for reflecting such energy back to the radar. A shorting element is used in conjunction with a pair of orthogonally mounted diode elements, all of which are positioned with the waveguide, such diode elements being suitably switched as by a multivibrator circuit to provide a phase modulated return signal. The diodes are mounted at a distance equal to an odd multiple of quarter wavelengths from the shorting element to produce a 180° phase shift of the incoming and reflected signal so as to produce a modulated return signal of the suppressed carrier type.

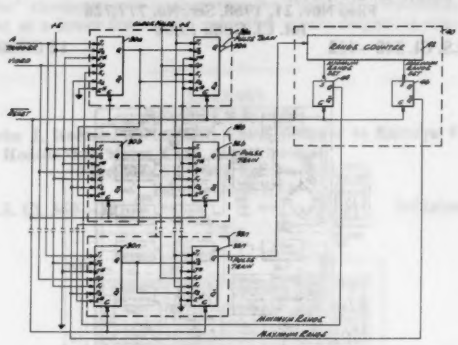
3,623,092

MULTIPLE COUNTER GATING WITH JK ELEMENTS

Robert P. Farnsworth, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed June 6, 1968, Ser. No. 736,934
Int. Cl. G01s 7/02, 9/04
U.S. Cl. 343—7 A **39 Claims**

A range gate circuit including two serially connected flip-flops for producing a pulse train output signal derived from a clock pulse signal during the interval of time between gate signals that correspond to transmitted range pulse signals and reflected energy signals. A plurality of the individual gate means are further connected in parallel circuit relationship in which each of the gate means is connected to another gate means so that the pulse train from each of the gate means is initiated simultaneously by the gate signals corresponding to transmitted range pulse signals and are sequentially discon-



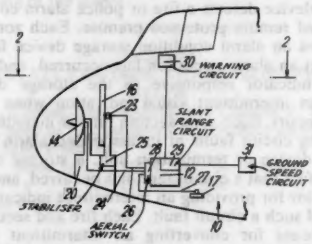
tinued by sequentially received reflected energy signals received from a plurality of targets whereby the range of the targets can be determined from the pulse counts of the pulse trains.

3,623,093

RADAR INSTALLATION

David Rooksby Bollard, North Fambridge, and William Alfred Jenkins, Westcliff-on-Sea, both of England, assignors to Ekco Electronics Limited, Essex, England

Filed Aug. 20, 1969, Ser. No. 851,577
Claims priority, application Great Britain, Oct. 31, 1968, 51,745/68
Int. Cl. G01s 9/02
U.S. Cl. 343—7 TA **24 Claims**



An airborne radar installation comprises a first aerial to monitor a first region, a second aerial to monitor a second region, a third aerial to monitor a third region, and transmitting and receiving equipment, at least the transmitting equipment being common to all said aerials, and means for sequentially operatively connecting each aerial to the common equipment during respective predetermined periods of time.

3,623,094

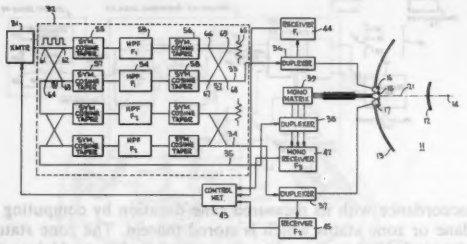
TARGET ACQUISITION ANTENNA

T. O. Paine, Acting Administrator of the National Aeronautics and Space Administration in respect to an invention of; Joseph P. Grabowski, Willingboro, and Walter E. Powell, Jr., Cinnaminson, N.J.

Filed Feb. 27, 1969, Ser. No. 802,812
Int. Cl. G01s 9/22; H01q 13/02
U.S. Cl. 343—7.4 **8 Claims**

A target tracking and acquisition system includes a Cassegrain reflector system driven by three horn feed elements. One horn excites a main lobe coincident with the reflector system boresight axis while the other horns excite main lobes at off axis angles above and below the boresight axis. Rela-

tively high amplitude crossovers exist between the three main lobes. The feed producing the main lobe coincident with the boresight axis lies at a focal point of the reflector system, while the feeds which excite the other two main lobes are removed from the boresight, elevation and azimuth axes of



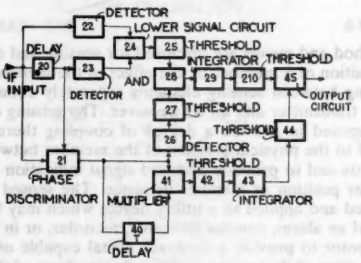
the reflector system. The feed elements are driven through a frequency multiplexer, having a plurality of cascaded channels. Each of the channels, except one, includes a pair of hybrids, between which are connected a pair of high pass filters.

3,623,095

PULSE RADAR SYSTEM

Lucien Gerardin, Le Raincy and Jacques Leger, Boulogne-sur-Seine, both of France assignor to Compagnie francaise Thomson Houston-Hotchkiss Brandt, Paris, France

Filed May 26, 1965, Ser. No. 459,537
Claims priority, application France, June 2, 1964, 976,768
Int. Cl. G01s *9/42, 7/28*
U.S. Cl. 343—7.7 **9 Claims**



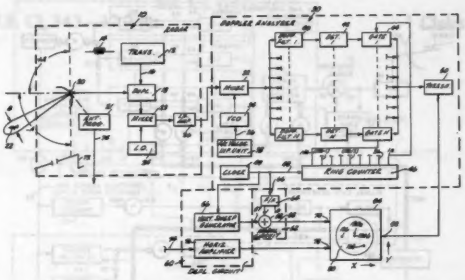
1. In a radar system having transmitting means for sending out pairs of uniformly spaced pulses of high-frequency wave energy during successive repetition periods and receiving means for producing echo pulses in response to reflections of said pulses from outlying objects, said receiving means including a first channel for conveying said echo pulses, a second channel for conveying said echo pulses with a delay relative to said first channel equaling the spacing of the pulses in each pair, and phase-discriminator means connected to receive echo pulses from both said channels for deriving therefrom a signal dependent in its magnitude upon the phase relationship of a delayed first echo pulse and a concurrently arriving undelayed second echo pulse, the combination therewith of control means connected to said phase-discriminator means for comparing the phase relationships of corresponding pairs of coincident echo pulses during consecutive repetition periods, and circuit means responsive to said control means for transmitting said signals to a load as a moving-target indication only upon the degree of correlation of said coincident echo pulses during consecutive repetition periods exceeding a predetermined threshold value.

3,623,096

DEFLECTION MODULATED TARGET DISCRIMINATOR

Guy V. Morris, Harbor City, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Feb. 15, 1967, Ser. No. 617,765
Int. Cl. G01s *9/42*
U.S. Cl. 343—7.7 **5 Claims**



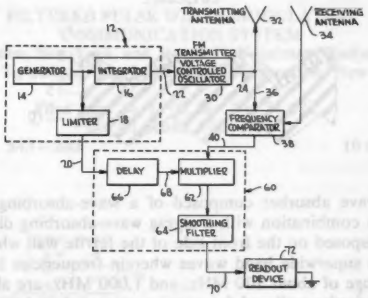
A target discriminator including a target signal source coupled to a display monitor. A modulation circuit is connected to the display monitor's deflection circuits to produce periodic shifts in the relative timing between the target signal source and the deflection signals. Target signals are displayed as multiple adjacent intensified spots on a display surface, and noise signals as single discrete intensified spots.

3,623,097

MODULATION CORRELATED FM RANGING SYSTEM

Raymond H. Femenias, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Army

Filed July 17, 1969, Ser. No. 842,479
Int. Cl. G01s *9/24*
U.S. Cl. 343—14 **11 Claims**



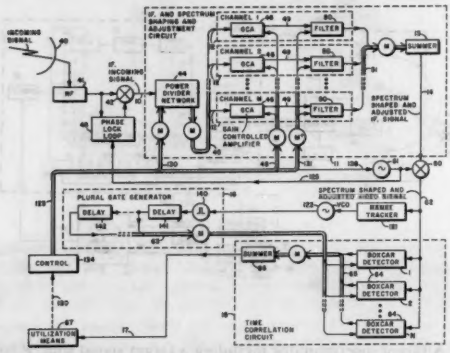
A modulation correlated FM ranging system for the detection and reliable indication of target presence and distance to target. The system utilizes cross-correlation and successive coherent detection techniques to provide a greatly improved signal-to-noise ratio at the receiver output in addition to the featured capability of coding against foreign signals. The system is insensitive to leakage effects and can range quantizing-effect free and ambiguity free while sacrificing neither transmitter bandwidth nor in-target observation time. The system also provides an optimal figure of merit for distance-measuring systems. In addition to distance measurement by frequency difference, the system incorporates a special time delay parameter which, when properly selected, allows a high correlation at the receiver output whenever a target is present in the target area.

3,623,098

SIGNAL PROCESSING

John Mc A. Jones, Tempe; Richard W. Kelly, Scottsdale, and Lawrence E. Langley, Scottsdale, all of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Jan. 31, 1969, Ser. No. 795,603
Int. Cl. G01s 7/34
U.S. Cl. 343—17.1 R 12 Claims



An input signal is supplied through a plurality of band-pass channels which selectively apply different amplifications to signals therein. Frequency adjustments in individual channels as well as between channels is provided. A composite signal is formed from the various channel signals which enhances signal detection. The electrical characteristics of the various channels is determined by interfering spectrum in which the input signal resides.

3,623,099

SUPERWIDE BAND WAVE ABSORBER

Kunihiro Suetake, No. 10-11 Minami, 3-Chome, Meguro-Ku, Tokyo, Japan

Filed Dec. 17, 1969, Ser. No. 885,870
Int. Cl. H01g 17/00
U.S. Cl. 343—18 A 5 Claims

A wave absorber composed of a wave-absorbing ferrite wall in combination with a zigzag wave-absorbing dielectric wall disposed on the front side of the ferrite wall which can absorb superwide band waves wherein frequencies between the range of about 100 MHz. and 1,000 MHz. are absorbed by the ferrite wall and frequencies greater than 1,000 MHz. are absorbed by the dielectric wall.
The aforementioned abstract is neither intended to define the invention of the application which, of course, is measured by the claims, nor is it intended to be limiting as to the scope of the invention in any way.

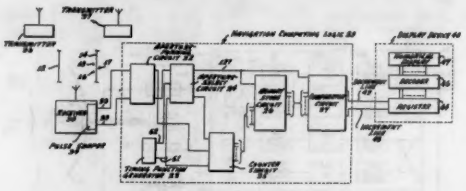
3,623,100

LANE COUNTER FOR DIGITAL NAVIGATIONAL COMPUTER SYSTEM

Bruce E. Rapp, Garden Grove, Calif., assignor to Northrop Corporation, Beverly Hills, Calif.

Filed May 1, 1969, Ser. No. 821,033
Int. Cl. G01s 1/24
U.S. Cl. 343–103 15 Claims

Computing circuitry for a monitoring system to computationally detect the occurrence of a transition which is derived from a time relationship of received input signals. Aperture computing circuitry selectively measures sampled aperture signals produced from the received input signals and circuit storage circuitry categorizes the sampled aperture signal in



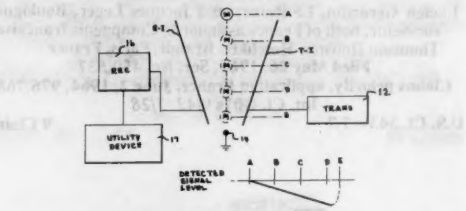
accordance with its measured time duration by computing a lane or zone status which is stored therein. The zone status data is further processed by a comparator circuit which computationally detects the occurrence of a monitored transition.

3,623,101

RF POSITION-SENSING AND CONTROL SYSTEM

Robert Karl Grebe, and Earl Raymond Kreinberg, both of Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed July 11, 1968, Ser. No. 744,070
Int. Cl. G01s 11/00
U.S. Cl. 343—112 R 10 Claims



Method and means are disclosed for sensing and detecting the position of a member by the effect of the member on the coupling between sensing elements separately connected to an RF transmitter and an RF receiver. The sensing elements are disposed to provide a degree of coupling therebetween related to the physical position of the member between such elements and to produce a sensed signal indication of either member position or member presence. The sensed signal is detected and applied to a utility device which may be in the form of an alarm, counter indicator, recorder, or in the form of a motor to provide a feedback signal capable of altering the position of the sensed member. In one form of the invention a wire or strip feeding control apparatus senses the position of a free-hanging span of the wire or strip to develop a reel-motor control signal and adjust the fall or sag of the span, thereby controlling feed rate and wire or strip tension. For nonconductive sensed members or for fluids a conductive element is carried in a frame of dielectric material in the plane of the sensing element coupling which restricts the sensed member to movement along an axis bisecting the zone of coupling of the transmitting and receiving antenna elements.

3,623,102

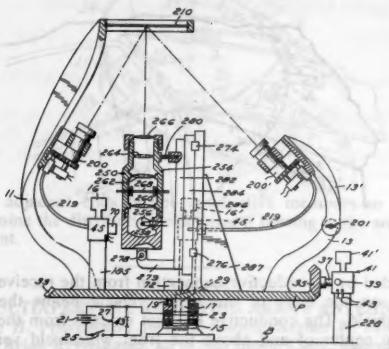
POSITION PLOTTER

George M. Holley, Jr., 510 Sheldon Road, Grosse Pointe, Mich.

Continuation-in-part of application Ser. No. 730,204, May 17, 1968, now Patent No. 3,524,187, Continuation-in-part of application Ser. No. 872,060, Oct. 29, 1969. This application Dec. 30, 1969, Ser. No. 889,080
Int. Cl. G01s 5/08
U.S. Cl. 343—112 PT 7 Claims

This disclosure relates to an automatic position plotter having particular utility for marine vessel navigation applica-

tions and which will give a visual plot in relation to a navigational chart during movement of the vessel. The plotter includes a rotatable platform carrying according to one embodiment of the invention a chart image projector and two reticle position projectors with the platform and the reticle projectors controlled by radio directional control apparatus



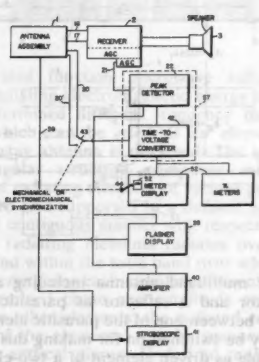
that automatically maintains the projected images in proper orientation during movements of the vessel to provide a continuous plot of position. If desired the platform may be rotated manually to provide a semicontinuous or semiautomatic position plotter, and further the reticle projectors may be replaced by mechanical pointer devices.

3,623,103

CONTINUOUSLY INDICATING RADIO DIRECTION FINDER

Charles A. Baldwin, 3406 Old Dominion Road, Alexandria, Va.

Filed Sept. 10, 1969, Ser. No. 856,599
Int. Cl. G01s *3/70*
U.S. Cl. 343—118 **6 Claims**



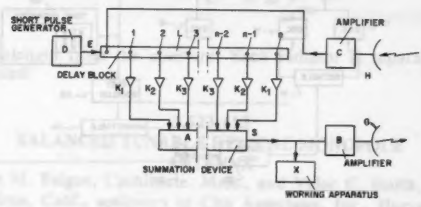
A radio direction finder comprising a continuously rotating assembly including a directional receiving antenna and means for generating a pulse upon movement of the antenna past a point of reference, means to detect a null in the reception of a radio signal by the antenna, and means triggered by the reference pulse and terminated by the detected signal to establish an output the magnitude of which is a function of the arc of rotation of the antenna between the point of reference and the null of the received signal. The antenna assembly includes angularly related loop antennas, one of which is associated with a sense antenna and the other of which is independently balanced against ground.

3,623,104

MATCHED FILTERS FOR THE TREATMENT OF FREQUENCY-MODULATED PULSES

Michel Jacques Robert Nicolas, Paris; Jacques Desire Deschamps, Saint-Cloud, and Andre Adamsbaum, Boulogne-Billancourt, all of France, assignors to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris-Seine, France

Filed Dec. 28, 1961, Ser. No. 163,970
Claims priority, application France, Dec. 30, 1960, 848524
Int. Cl. G01s *9/02*
U.S. Cl. 343—17.2 R **1 Claim**



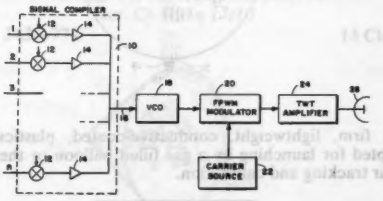
1. A long-range radar system comprising in combination a short pulse generator, a transmission set with an antenna, a reception set with an antenna, matched filter circuitry comprising a single delay line for transforming short pulses of high peak power into long pulses of low peak power and vice versa with a single input terminal at one end connected to both said generator to receive pulses therefrom and to said reception set to receive signals therefrom, the delay line having a center of symmetry with a plurality of spaced taps along said delay line symmetrically located two by two about said center of symmetry, a summation stage having an input line for each of said taps and an output connected to said transmission set for supplying a signal proportional to the algebraic sum of all voltages supplied to the input lines, and separate amplifiers connecting each tap with each input line with respective gains for the symmetric pairs of taps being equal.

3,623,105

FILTERED PULSE WIDTH MODULATION COMMUNICATION SYSTEM

Ira Kamen, New York, and Joseph H. Vogelman, Roslyn, both of N.Y., assignors to Laser Link Corporation, New York, N.Y.

Filed Apr. 24, 1970, Ser. No. 31,672
Int. Cl. H04b *1/04, 1/16*
U.S. Cl. 343—203 **10 Claims**



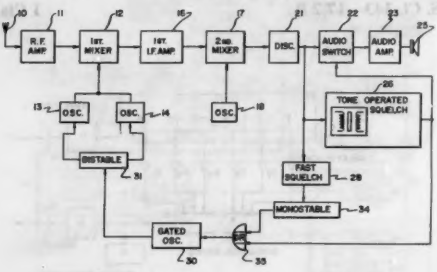
A communications system provides a practical means for transmitting a plurality of input information signals, such as television signals, over a single transmitter. The signals are combined or multiplexed to form a composite signal which serves to modulate an initial carrier signal. That modulated signal in turn pulse modulates a transmitter carrier to produce a pulse width modulated signal that contains all the essential information of the input signals.

3,623,106

MULTIFREQUENCY RECEIVER EMPLOYING TONE-CODED SQUELCH WITH AUTOMATIC CHANNEL SELECTION

Eugene A. Zerega, Jr., Schiller Park, Ill., assignor to Motorola, Inc., Franklin Park, Ill.

Filed July 3, 1969, Ser. No. 838,733
Int. Cl. H04j 1/14
U.S. Cl. 343—206 **8 Claims**



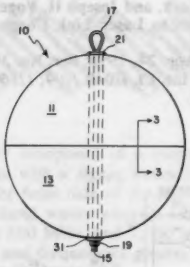
A switching system for a multichannel receiver employing a tone-coded squelch circuit includes a plurality of local oscillators for operating on different channels and renders the oscillators operative in turn, with the switching system being latched when a carrier is received to hold the receiver on the channel having the carrier for a length of time sufficient to enable oscillations to build up in the tone-operated squelch circuit, thereby permitting the cycle of operation of the switching system to be independent of the time required for oscillation buildup in the tone-operated squelch circuit which then assumes control of the operation of the switching circuit.

3,623,107

RADAR CALIBRATION SPHERE

Robert T. Holdren, III, Pocomoke, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration

Filed Mar. 30, 1970, Ser. No. 23,532
Int. Cl. H01q 1/28
U.S. Cl. 343—706 **5 Claims**



A firm, lightweight, conductive-coated, plastics sphere adapted for launching by a gas filled balloon or the like for radar tracking and calibration.

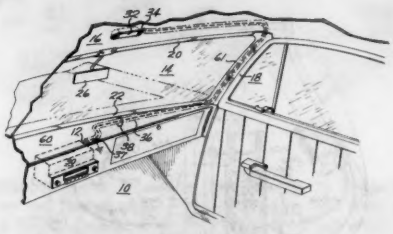
3,623,108

VERY HIGH FREQUENCY ANTENNA FOR MOTOR VEHICLES

Wilbur F. DuBois, and Conrad O. Gardner, both of Seattle, Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 13, 1969, Ser. No. 824,041
Int. Cl. H01q 1/32
U.S. Cl. 343—712 **1 Claim**

An omnidirectional type antenna for very high frequency receivers in motor vehicles. The antenna utilizes a single conductive element coupled between a very high frequency receiver located below the front windshield and a conductive connection with the body of the motor vehicle at a point immediately above the front windshield and at the center thereof. A series coupling capacitor provides coupling of the conductive element to the very high frequency receiver. The ground connection for the very high frequency receiver is



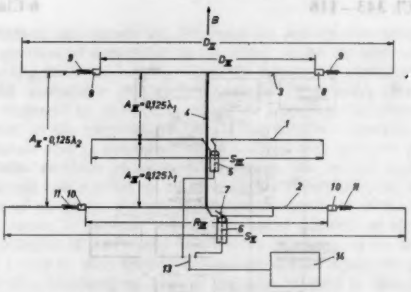
provided by a conductive connection from the receiver to a point on the body of the motor vehicle below the front windshield. The conductive element extends from the point at the center of and above the front windshield vertically downward through or adjacent to the windshield to the very high frequency receiver or extends vertically downward through the corner post between the front windshield and the adjacent side door.

3,623,109

YAGI-TYPE MULTIBAND ANTENNA HAVING ONE ELEMENT PARASITIC IN ONE FREQUENCY BAND AND DRIVEN IN ANOTHER FREQUENCY BAND

[Klaus Neumann, Am Klosterberg 13, 667 St., Ingbert (Saar), Germany

Filed Dec. 26, 1967, Ser. No. 693,381
Int. Cl. H01q 21/12, 21/30
U.S. Cl. 343—722 **3 Claims**



A Yagi-type multiband antenna including a driven element, a director and a reflector as parasitic elements in which a feeder between one of the parasitic elements and the transmitter may be switched on for making this one parasitic element operable as driven element of a two-element antenna system.

3,623,110

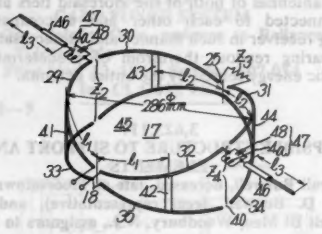
LOOP ANTENNA WITH SPACED IMPEDANCE ELEMENTS

Toshitada Doi, Kanagawa-ken, and Kosuke Akiba, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sept. 9, 1969, Ser. No. 856,281
Claims priority, application Japan, Sept. 10, 1968, 43/65131
Dec. 14, 1968, 43/91931
Int. Cl. H01q 11/12
U.S. Cl. 343—722 **6 Claims**

In a directional antenna, particularly for television receivers, in which a loop antenna element consists of at least

three arcuate conductive members, output terminals are connected between two of the adjacent ends of the conductive members and impedance means are connected between the



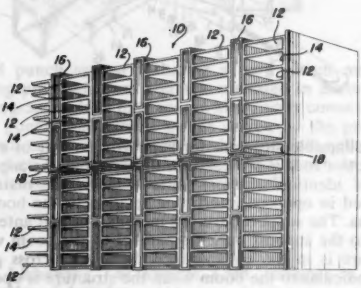
other adjacent ends of the conductive members so as to determine the distribution of a current flowing to the antenna element.

3,623,111

MULTIAPERTURE RADIATING ARRAY ANTENNA

Joseph H. Provencher; Jerry E. Boyns; Archer D. Munger, and Brian R. Gladman, all of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy

Filed Oct. 6, 1969, Ser. No. 864,082
Int. Cl. H01q 3/26
U.S. Cl. 343—727 **4 Claims**



An integrated function microwave radiating structure capable of radiating electromagnetic energy at several selectively predetermined different frequency bands simultaneously and which can be used as an element of a large microwave array antenna is disclosed. The unitary substantially rectangular structure comprises multiple, closely spaced sets of radiating elements of various possible configurations located and supported in a defined aperture area in an interlaced contiguous manner with respect to each other. Each set of radiating elements radiates over a particular frequency band within the total band over which coverage is required. By energizing each radiating element independently in a predetermined phase and amplitude relationship with respect to the other elements, the radiated composite beam (from each of the elements) can be scanned in either the horizontal or vertical planes. Undesired mutual interaction affects between the closely spaced adjacent elements operating at different frequencies are minimized by cross-polarizing techniques.

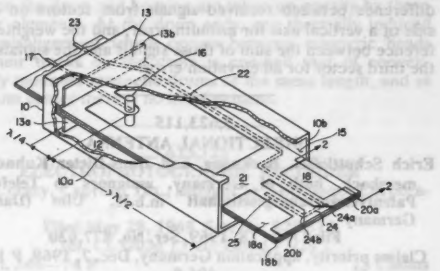
3,623,112

COMBINED DIPOLE AND WAVEGUIDE RADIATOR FOR PHASED ANTENNA ARRAY

William Emory Rupp, Glen Arm; Richard Monroe Cox, Baltimore, Md., and Robert Alexander Keough, York, Pa., assignors to The Bendix Corporation

Filed Dec. 19, 1969, Ser. No. 886,536
Int. Cl. H01q 3/26, 21/00
U.S. Cl. 343—727 **5 Claims**

An antenna includes a waveguide slot aperture radiator and a dipole radiator centrally located therein and located longitudedly with respect to the waveguide a quarter



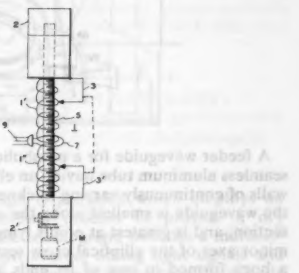
wavelength from the aperture. Each radiator is separately excited.

3,623,113

BALANCED TUNABLE HELICAL MONOPOLE ANTENNA

Ivan M. Falgen, Cochituate, Mass., and Valor C. Smith, La Mesa, Calif., assignors to Chu Associates, Inc., Harvard, Mass.

Filed Aug. 21, 1969, Ser. No. 852,052
Int. Cl. H01q 1/36
U.S. Cl. 343—747 **4 Claims**



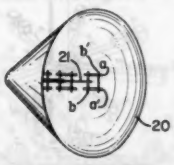
This disclosure deals with a novel balanced tunable helical monopole antenna, that, through a symmetrical construction involving a central feed and simultaneous turn-shorting tuning from the ends thereof, enables the obviating of the necessity for a ground plane.

3,623,114

CONICAL REFLECTOR ANTENNA

T. O. Paine, Administrator of the National Aeronautics and Space Administration with respect to an invention of, and Arthur F. Seaton, Palos Verdes Estates, Calif.

Filed Aug. 11, 1969, Ser. No. 848,776
Int. Cl. H01q 13/10
U.S. Cl. 343—771 **13 Claims**



A conical reflector antenna is disclosed with a feed that is either a close approximation to a line source or a cylindrical structure which is electrically equivalent to a line source. Nearly complete control of its aperture illumination function is achieved by exciting various amounts of the line source or cylindrical feed. In addition to beamwidth control of a collimated beam that is linearly or circularly polarized, phase-sensing monopulse operation is made possible by dividing a

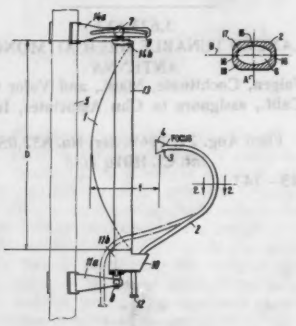
cylindrical feed structure into three equal sectors and incorporating conventional directional couplers for obtaining the difference between received signals from sectors on either side of a vertical axis for azimuth error, and the weighted difference between the sum of those signals and the signals from the third sector for an elevation error.

3,623,115

DIRECTIONAL ANTENNA

Erich Schuttloffel, Backnang, and Hans-Dieter Kuhne, Allmersbach, both of Germany, assignors to Telefunken Patentverwertungsgesellschaft m.b.H, Ulm (Danube), Germany

Filed Nov. 18, 1969, Ser. No. 877,630
Claims priority, application Germany, Dec. 7, 1968, P 18 13 406.0
Int. Cl. H01q *13/02, 19/14*
U.S. Cl. 343—781 **6 Claims**



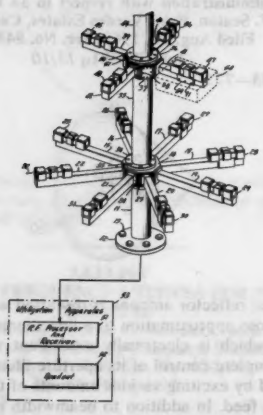
A feeder waveguide for a parabolic antenna formed from a seamless aluminum tube having an elliptical cross section and walls of continuously varying thickness. The wall thickness of the waveguide is smallest along the axes of its elliptical cross section, and is greatest at points lying between the major and minor axes of the elliptical cross section. The waveguide has a horn formed in one of its ends and a connecting flange formed in the other of its ends.

3,623,116

FERRITE CORE CROSSED SPACED LOOP ANTENNA

Terry C. Green, and Ruell F. Solberg, Jr., both of San Antonio, Tex., assignors to The United States of America as represented by the Secretary of the Navy

Filed Aug. 19, 1970, Ser. No. 65,073
Int. Cl. H01q *7/08*
U.S. Cl. 343—788 **10 Claims**



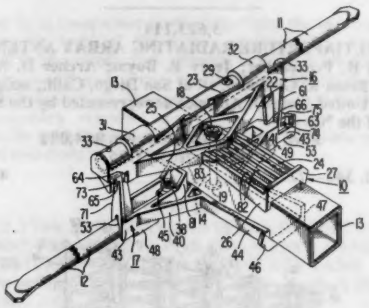
Disclosed herewith is an antenna having an upper tier field sensor of four ferrite core loop antennas connected in crossed simple-loop mode disposed at 90° intervals around a center support pipe and a lower tier direction finder of eight ferrite core loop antennas connected in crossed spaced loop mode likewise disposed around said center support pipe but at 45° intervals. The electrical leads of each of said ferrite core loop antennas of both of the aforesaid tiers are respectively connected to each other and a compatible data processing receiver in such manner and as necessary as to effect a bearing readout therefrom of predetermined electromagnetic energy sensed by the entire antenna.

3,623,117

COLLAPSIBLE STRUCTURE TO SUPPORT ANTENNA ELEMENTS

Neil Worrall Burwell, deceased, late of Moorestown, N.J. (by Shirley D. Burwell, legal representative), and Franklin Roosevelt Di Meo, Woodbury, N.J., assignors to RCA Corporation

Filed Dec. 29, 1969, Ser. No. 888,478
Int. Cl. H01q *3/02*
U.S. Cl. 343—882 **13 Claims**



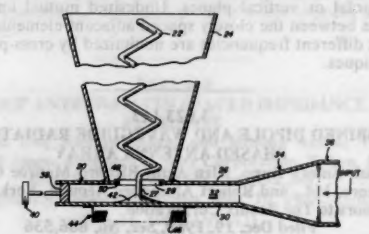
A collapsible structure for supporting a pair of elongated conductive rods is provided. In the described arrangement, a pair of identical support parts of insulator material are mounted in opposed interfitting relation to the boom of an antenna. The support parts are mounted so that antenna rods fixed to the support parts lie parallel to the boom when the structure is in the collapsed condition and cross generally perpendicular to the boom when the structure is operated to place the rods in their extended or operative condition. The two support parts of insulator material each have a load bearing leg extending therefrom which fits into a slot in the other insulator support part upon the parts being pivoted to place the rods in the extended condition.

3,623,118

WAVEGUIDE-FED HELICAL ANTENNA

George J. Monser, and John R. Ehrhardt, both of Santa Barbara, Calif., assignors to Raytheon Company, Lexington, Mass.

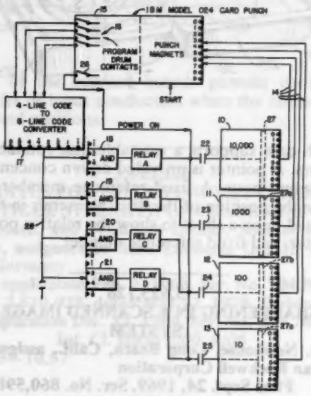
Filed July 1, 1969, Ser. No. 838,143
Int. Cl. H01q *1/36, 1/50;* H03h *7/38*
U.S. Cl. 343—863 **11 Claims**



A helical antenna excited from a waveguide having sidewalls of reduced height to provide an improved im-

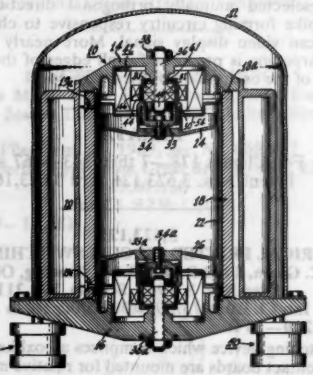
pedance match between the waveguide and the helix, one end of the helix being attached to the waveguide whereby heat may be conducted therefrom during operation.

3,623,119
CARD PUNCH SYSTEM
Robert F. Orr, Toledo, Ohio, assignor to Reliance Electric Company, Toledo, Ohio
Filed Mar. 13, 1969, Ser. No. 807,054
Int. Cl. G01d 9/38
U.S. Cl. 346—9 3 Claims



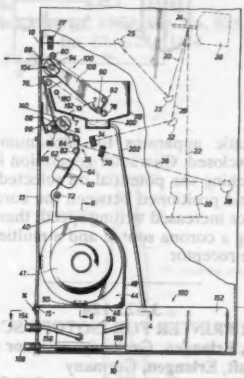
A card punch system including a card punch machine comprising program drum contacts operated in accordance with a program code, a data source electrically connected to the card punch, and circuit means driven by the program drum contacts electrically connected to the data source for entering data automatically into the card punch in serial fashion in accordance with said program code.

3,623,120
MAGNETIC DRUM SYSTEM
Abraham Lichowsky, Los Angeles, Calif., assignor to Radio Corporation of America
Filed July 11, 1968, Ser. No. 744,059
Int. Cl. G11b 25/02, 5/76
U.S. Cl. 346—74 M 12 Claims



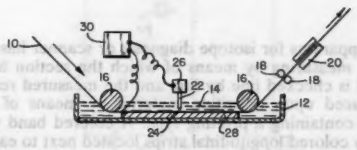
Lightweight, thin-walled magnetic drum, without center shaft, in heavy-walled, rigid housing. Flexure elements under stress which act as end walls of the drum are each fixed to a bearing race. Another race of each bearing is fixed to the housing. Differential expansion and other misalignments between the drum and housing are taken up equally by these flexure elements. At the drum ends, any thermally induced axial misalignment which occurs between magnetic heads and their tracks on the drum is one-half that of conventionally mounted magnetic drums of the same length, and at the drum center there is no misalignment.

3,623,121
ELECTROPHOTOGRAPHIC RECORDER
Gene Corgey, Cypress, Tex., assignor to GEO Space Corporation
Filed May 28, 1969, Ser. No. 828,512
Int. Cl. G03g 15/10; G01d 11/24
U.S. Cl. 346—74 P 13 Claims



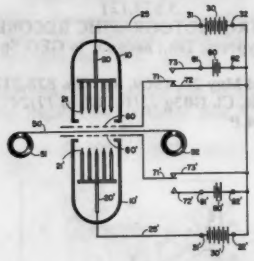
A recording seismograph is provided which employs an electrophotographic recording process to provide a dry record or seismogram. The seismograph includes a multielement galvanometer, a light source, timing light signals and optical means for impinging the light traces on a chemically treated paper which has been properly charged prior to being exposed to the light traces. The exposed paper is then passed through a developer tank in which the paper is sprayed with a toner on the sensitized side of the paper only. Control of the toner spray achieves controlled development of the image. The paper storage and loading mechanism is mounted on the front door which allows easy loading of the recorder.

3,623,122
ELECTRIC RECORDING APPARATUS EMPLOYING LIQUID DEVELOPER
Richard A. Fotland, Cleveland, Ohio, assignor to Horizons Incorporated, a division of Horizons Research Incorporated, Cleveland, Ohio
Filed June 4, 1970, Ser. No. 43,391
Int. Cl. G03g 13/00
U.S. Cl. 346—74 E 8 Claims



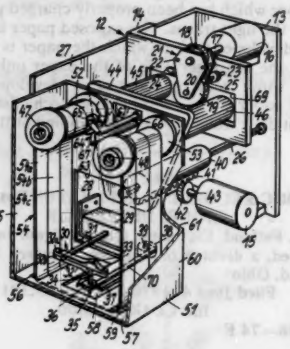
A method and apparatus for generating imagery in which information from either an original document or an electronic input is placed on paper or other suitable record medium by the use of control element(s) which establish an electric field adjacent to the record medium; the recording element(s) being immersed in a liquid.

3,623,123
ELECTROSTATIC PRINTER
Alex E. Jvirblis, Mountain View, Calif., assignor to The Singer Company
Filed Mar. 10, 1969, Ser. No. 806,782
Int. Cl. G01d 15/06
U.S. Cl. 346—74 ES 13 Claims



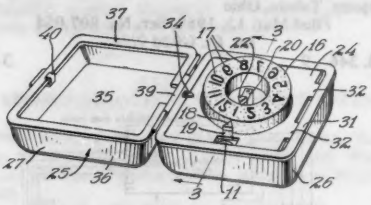
An electrostatic apparatus for alphanumeric character generation is disclosed. Character generation is controlled by selectively switching the potential on selected elements of a multielement grid positioned between the corona source and the receptor. For increased writing speed, there is disclosed a structure having a corona source and a multielement grid on each side of the receptor.

3,623,124
COLOR PRINTER FOR ISOTOPE SCANNER
Winfried Platz, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Erlangen, Germany
Filed Jan. 3, 1969, Ser. No. 788,721
Claims priority, application Germany, Jan. 8, 1968, P 16 16 113.0
Int. Cl. A61b 6/00; G01d 15/20
U.S. Cl. 346—106 2 Claims



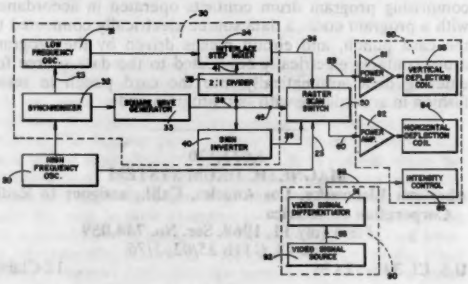
An apparatus for isotope diagnosis or scanner has a probe for ray measuring by means of which the section being examined is checked line by line and the measured results are reproduced upon a writing material by means of a color scriber containing a printing type. A colored band with differently colored longitudinal strips located next to each other is moved longitudinally and transversely under the printing type so that markings of different colors are imprinted depending upon the results of the measurement. The invention is particularly characterized by only a mechanically sliding connection of the movable parts of the writing means with the band-moving drives attached to fixed supports, the drive of the printer of markings and the switches for varying the direction of movement of the band.

3,623,125
TIME-RECORDING WATCH
Emmett D. McGowan, 1831 Portland Ave., St. Paul, Minn.
Filed July 22, 1969, Ser. No. 843,358
Int. Cl. G01d 15/20
U.S. Cl. 346—142 1 Claim



A watch case supports a rotatable disc rotatable every 12 or 24 hours. A pointer is provided driven concentrically with said disc every hour. A fixed reference member is provided to indicate the position of the disc. Numerals in the disc may be imprinted upon a sheet to show the relative position of the disc, pointer, and fixed reference number.

3,623,126
EDGE SHARPENING IN A SCANNED IMAGE DISPLAY SYSTEM
George B. Newhouse, Long Beach, Calif., assignor to North American Rockwell Corporation
Filed Sept. 24, 1969, Ser. No. 860,598
Int. Cl. H04m 5/14
U.S. Cl. 178—7.5 R 6 Claims



An interlaced raster scan that scans alternately in each of two preselected mutually orthogonal directions, utilizing signal spike forming circuitry responsive to changes in the raster scan video display signal. More nearly equal image edge sharpening is provided for all edges of the display, regardless of the orientation of the image edge.

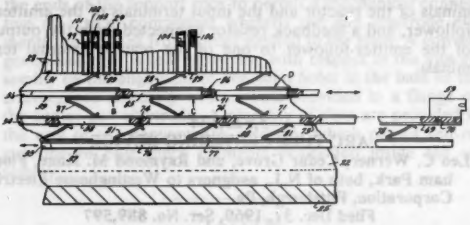
ERRATA

For Classes 178—7 thru 343—767 see:
Patent Nos. 3,623,126 thru 3,623,162

3,623,127
ELECTRICAL PRINTED CIRCUIT SWITCHING DEVICE
Ashley C. Glenn, 2440 Dorian Drive, Reading, Ohio
Filed Nov. 3, 1969, Ser. No. 873,211
Int. Cl. H01b 15/00; H05k 5/00; H02b 1/04
U.S. Cl. 200—16 R 4 Claims

A switching device which comprises a boxlike enclosure in which contact boards are mounted for relative movement. Interconnecting contacts on the contact boards establish paths of electrical connection between input conductors and rows of outwardly extending contacts. The contact boards are moved between selected positions to connect selected rows of outwardly extending contacts to the input conductors. Circuit boards each having contacts engageable with outwardly

extending contacts of a selected row are mounted in the enclosure in position for engagement of contacts of the circuit board with the outwardly extending contacts of one row.

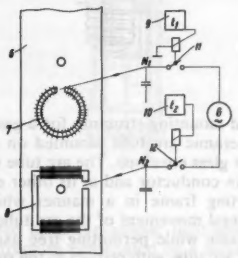


Movement of the contact boards permits connection of selected pairs of input conductors when the contacts boards are in selected positions.

3,623,128
APPARATUS FOR IMPROVING THE TORSIONAL FATIGUE STRENGTH OF CRANKSHAFTS

Gerhard Seulen, and Friedham Reinke, both of Remscheid, Germany, assignors to AEG-Elotherm GmbH, Renscheid-Hasten, Germany

Original application Feb. 2, 1968, Ser. No. 704,891, now Patent No. 3,510,928, dated May 12, 1970. Divided and this application Dec. 22, 1969, Ser. No. 889,766
Int. Cl. H05b *5/00, 9/06*
U.S. Cl. 219—10.57 **4 Claims**

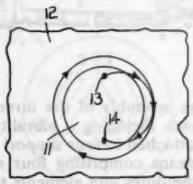


Crankshafts frequently have low torsional fatigue strength in the region of the oilholes on the main bearing surfaces when inductively hardened. The invention provides a method and apparatus for producing hardened zones which increase in depth along the main bearing surface towards the oilhole, which oilhole is preferably hardened along its whole length, whereby the torsional fatigue strength is improved.

3,623,129
ELECTRON BEAM WELDING

Brian Leslie Miles, Kings Heath, Birmingham, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Sept. 17, 1969, Ser. No. 858,687
Claims priority, application Great Britain, Sept. 23, 1968, 45,075/68
Int. Cl. B23k *15/00*
U.S. Cl. 219—121 EB **5 Claims**



A method of electron beam welding a patch into an aperture in a finished component to form an assembly. A patch is inserted into a corresponding aperture in a component, excess material being provided on the face of the patch and/or the component to be presented to the electron beam. The electron beam is directed so that it first impinges on the excess material, and then the component is moved relative to the beam so that the beam impinges on and then follows the interface between the component and the patch. Thus, the patch is welded to the component around the periphery of the patch. The component is then moved relative to the beam so that the beam again impinges on the excess material, the action of the beam is then stopped, and the excess material is machined away.

3,623,130
TARGET ASSEMBLY FOR A THERMAL NEUTRON GENERATOR

Desmond G. Dalrymple, Deep River, Ontario, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Ontario, Canada

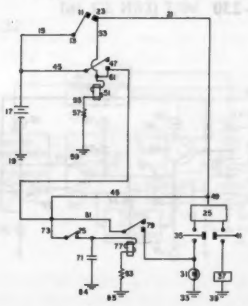
Filed May 16, 1969, Ser. No. 825,140
Int. Cl. G21g *3/04*
U.S. Cl. 250—84.5 **2 Claims**

A target assembly for a thermal neutron generator wherein an elongated target tube has a top end receiving liquid metal and a bottom end receiving a windowless proton beam tube; the liquid metal enters the target zone with a swirl causing the liquid metal to adhere to the wall of the target tube so as not to enter the proton beam tube.

3,623,131
COMBINATION TIME DELAY AND SELF-ACTUATING VOLTAGE LEVEL PROTECTIVE CIRCUIT FOR VEHICULAR ELECTRICAL SYSTEMS

Carl D. Russell, 1502 South Boulder St., Tulsa, Okla.

Filed May 19, 1970, Ser. No. 038,693
Int. Cl. H02h *3/24*
U.S. Cl. 307—10 BP **18 Claims**



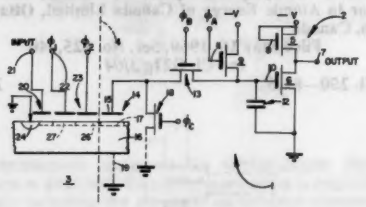
The invention resides in a modification of the vehicular electrical system to include a protected time delay circuit for

maintaining the lights or the like on for a predetermined period after initiation, and a voltage-sampling interrupter for interrupting the electrical system when the battery voltage decays to a predetermined level if the lights or other load have been inadvertently left on or short-circuited.

3,623,132
CHARGE SENSING CIRCUIT

Robert D. Green, Anaheim, Calif., assignor to North American Rockwell Corporation

Filed Dec. 14, 1970, Ser. No. 979,810
Int. Cl. H03k *19/08, 19/40*
U.S. Cl. 307—205 **9 Claims**

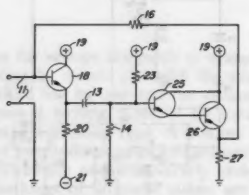


A first field effect transistor is turned on during a first phase recurring interval for charging a first capacitor at the gate electrode of an output field effect transistor. During a second phase recurring interval, a second field effect transistor in series between the plate of a second capacitor and the first capacitor, is turned on. The voltage on the first capacitor is connected to the plate of the second capacitor for inverting or depleting the semiconductor region subjacent the plate of the second capacitor. If minority carriers are available in the semiconductor substrate adjacent to the region covered by the plate, the subjacent region is inverted and electrically connected to a charge coupled circuit. If an inversion does not occur, the voltage on the first capacitor is unchanged and the output field effect transistor remains on for indicating the absence of charge (minority carriers) on the charge coupled circuit. If the charge coupled circuit provides minority carriers to the second capacitor, the voltage on the first capacitor is reduced and the output field effect transistor is turned off for indicating the presence of charge on the charge coupled circuit.

3,623,133
TWO-TERMINAL INDUCTORLESS ELECTRONIC REACTOR

Delroy Ashby, Naperville, Ill., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Nov. 12, 1969, Ser. No. 875,752
Int. Cl. H03k *3/26*
U.S. Cl. 307—230 **1 Claim**



Large values of accurately controlled inductive or capacitive reactance are obtained by using a two-terminal electronic reactor made up of only transistors, resistors, a capacitor and, if desired for protective purposes, a few diodes. In its simplest form, the electronic reactor includes a transistor emitter-follower stage, an impedance network including a series arm and a shunt arm connected between the external terminals of the reactor and the input terminals of the emitter-follower, and a feedback resistor connected from the output of the emitter-follower to one of the reactor external terminals.

3,623,134
ARC TUBE CENTERING DEVICE

Leo C. Werner, Cedar Grove, and Raymond M. Kane, Florham Park, both of N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

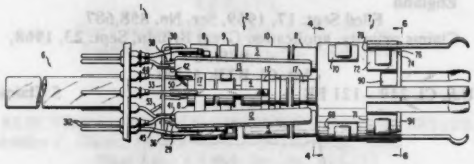
Filed Dec. 31, 1969, Ser. No. 889,597
Int. Cl. H01j *61/34*
U.S. Cl. 313—25 **8 Claims**

An improved mounting structure for a gas discharge lamp employing a ceramic arc tube mounted on a support frame within an outer glass envelope. The arc tube is secured at one end to a lead in conductor and at its other end is connected to the supporting frame in a manner which substantially restricts all lateral movement of the arc tube with respect to the support frame while permitting free axial movement of one end of the arc tube with respect to the support frame.

3,623,135
ELECTRON GUN ASSEMBLY MOUNTING

Frederick F. Doggett, East Syracuse, and Leonard W. Jenne, Jr., Baldwinsville, both of N.Y., assignors to General Electric Company

Original application May 24, 1968, Ser. No. 731,807. Divided and this application Sept. 16, 1969, Ser. No. 870,768
Int. Cl. H01j *1/88, 5/50, 19/44, 29/50*
U.S. Cl. 313—70 R **4 Claims**



An electron gun assembly of the three gun, in-line type. The three guns each including a plurality of electrode elements are rigidly attached to four support rods or glass beads by a mounting means comprising four metal straps which connect each of the outer gun elements to two support rods and the center gun elements to all four support rods. A first group of four L-shaped metal tabs are imbedded in the ends of the support rods, and two mounting bars are each con-

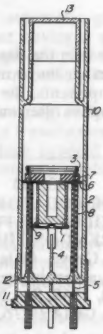
nected at both ends to two of the tabs for the purpose of making electrical connections to the gun heater elements. A second group of U-shaped metal tabs are also imbedded in the ends of the support rods to permit a mechanical connection of a stem component whereby the gun electrode elements are isolated from forces applied to the stem. A convergence assembly is self-registering with respect to the gun assembly by the alignment of precision holes in the base of the convergence assembly with cutouts provided in a flange on the center gun electrode. A plurality of slots are provided in the wall of the convergence assembly which permit self-registering of pole piece elements positioned inside the assembly.

3,623,136

LIGHT-SOURCE LAMP FOR ATOMIC LIGHT-ABSORPTION ANALYSIS

Sadami Tomita, Hitachi-shi; Akira Hosoya, Hitachi-shi, and Hiroshi Okagaki, Katsutashi-shi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 7, 1969, Ser. No. 822,360
Claims priority, application Japan, May 10, 1968, 43/30883
Int. Cl. G01j *3/12;* **H01j** *61/08*
U.S. Cl. 313—178 **26 Claims**



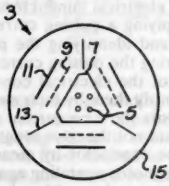
A light source lamp for atomic light-absorption analysis comprising a structure constituted by a molded body of fine metal wires having a relatively high-melting-point which are mechanically closely linked with each other having a metal having a relatively low-melting-point impregnated in the gaps between the fine wires, wherein the metal of a low-melting-point is continuously fed to a hollow portion through the gaps between the fine wires while maintaining the contour of the structure by virtue of the frame composed of the fine metal wires of a high-melting-point, thereby making it possible to produce a high light-intensity resonance line of the low-melting-point metal which is stabilized for a long time.

3,623,137

ELECTRON DISCHARGE DEVICE

Victor H. Campbell, Sylvan Heights, Emporium, Pa., assignor to Sylvania Electric Products, Inc.

Original application Dec. 8, 1966, Ser. No. 600,182, now Patent No. 3,479,449, dated Nov. 18, 1969. Divided and this application Apr. 30, 1969, Ser. No. 820,448
Int. Cl. H01j *21/00, 19/14*
U.S. Cl. 313—301 **1 Claim**



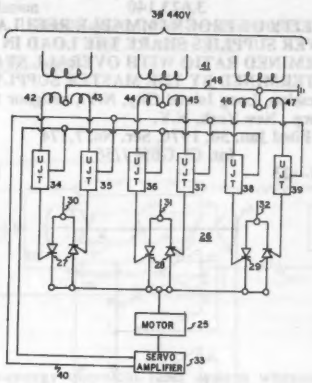
An electron discharge device includes a plurality of signal input and signal output electrodes and a cathode electrode common to all other electrodes to provide a stable ratio of output signals in response to a ratio of input signals.

3,623,138

LINEAR DC VOLTAGE TO FIRING ANGLE CONVERTER CIRCUIT

John A. Joslyn, Dalton, Mass., assignor to General Electric Company

Continuation-in-part of application Ser. No. 479,550, Aug. 13, 1965, now abandoned. This application Aug. 26, 1969, Ser. No. 853,187
Int. Cl. H02p *5/16*
U.S. Cl. 318—345 **6 Claims**



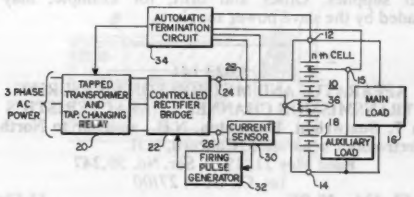
A triggering circuit for a controlled rectification system is provided which supplies firing pulses to the rectifiers at some phase angle determined by an input DC error signal. The firing circuit uses a unijunction transistor having a pulse output transformer coupled to the transistor output circuit for application of firing pulses to the gate-cathode circuit of the controlled rectifier. A DC error voltage is applied to one of the base electrodes of the unijunction transistor and a phasing voltage is coupled to its emitter electrode for synchronization of the triggering pulse with an AC voltage applied to the associated rectifier of the rectification system. A preferred application of the firing circuit is to control a reversible DC motor utilizing an SCR power amplifier in a servomechanism or regulating system.

3,623,139

METHOD AND APPARATUS FOR AUTOMATICALLY CONTROLLING THE FAST CHARGING OF RECHARGEABLE BATTERIES

Arthur F. Dickerson, Woodland Hills, Calif., assignor to General Electric Company

Filed Nov. 6, 1969, Ser. No. 874,447
Int. Cl. H02j *7/04*
U.S. Cl. 320—22 **7 Claims**



A method and apparatus for automatically controlling the fast recharging of a storage battery pack consisting of a number of cells (N). The cells are conditioned so that at least one of them is at a slightly higher charge state than the

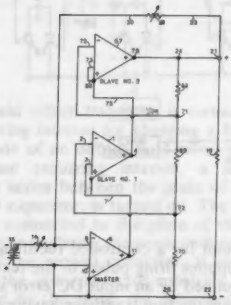
remaining cells (N-1) before initiating a recharging process. All the cells (N) are connected to a source of charging current and a voltage level responsive circuit is connected across the at least one cell which is at a higher charge state in order to monitor the increasing voltage thereof. The cells (N) are initially charged with a high current until the voltage at the terminals of the cell with the higher charge state abruptly rises and thereby signals to the voltage level responsive circuit that the cell has achieved full charge. At this point, the voltage level responsive circuit causes a transformer tap changing and switching circuit to terminate the high-current fast-charging mode and to establish a low-current slow-charging mode.

3,623,140

PLURALITY OF PROGRAMMABLE REGULATED POWER SUPPLIES SHARE THE LOAD IN A PREDETERMINED RATIO WITH OVERALL STABILITY DETERMINED BY THE MASTER SUPPLY

Sarkis Nercessian, Long Island City, N.Y., assignor to Forbro Design Corp., New York, N.Y.

Filed Jan. 30, 1970, Ser. No. 7,174
Int. Cl. G05f *1/56*
U.S. Cl. 323—23 **10 Claims**



A plurality of programmable power supplies are connected in cascade and are interconnected in such manner as to provide that they share the load in predetermined ratios and so that the overall stability is determined substantially solely by the characteristics of the master supply.

Prior art combinations of power supplies have been of two general kinds. The first kind has been called "piggy-back" where an unregulated power supply is connected in series with a programmable regulated power supply. An overall feedback circuit has been used to control the voltage across the load. Such an arrangement, however, cannot provide output voltage less than the output of the unregulated power supply and voltage ratio load sharing cannot be provided. The second kind uses two programmable regulated power supplies in a master-slave combination. The master power supply is used to control the slave power supply. There is no overall feedback and hence, the accuracy and stability of the system is governed by the less stable and accurate of the two power supplies. Offset and drift, for example, may be degraded by the slave power supply.

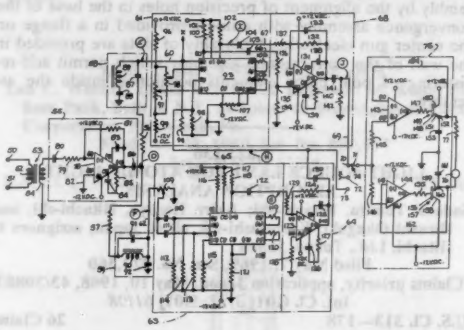
3,623,141

APPARATUS AND METHOD FOR MEASURING TRANSMISSION CHANNEL CHARACTERISTICS

John T. Boatwright, Hopkinton, N.H., assignor to Northeast Electronics Corporation, Concord, N.H.

Filed May 21, 1970, Ser. No. 39,247
Int. Cl. G01l *27/00*
U.S. Cl. 324—57 DE **11 Claims**

A test signal is produced by adding a sinusoidal signal at a fundamental frequency to the second harmonic thereof which has been produced by squaring the fundamental frequency signal in a linear multiplier and eliminating the DC component. The dual-frequency phase coherent test signal is detected after transmission through the transmission channel under test. The detected signal is acted upon with the low-frequency component being squared in a linear multiplier to produce an intermediate signal from which the DC component is eliminated and which is then combined with the



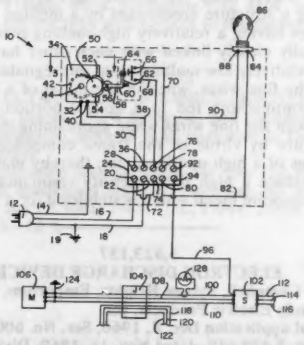
high-frequency component in the detected signal by modulation with the aid of a further linear multiplier to produce the sum and difference components, the difference components being selected by a low-pass filter and measured as to peak-to-peak amplitude.

3,623,142

CABLE CONDUCTOR LOCATOR INCLUDING CAM-OPERATED SWITCH MEANS FOR IMPRESSING A PULSING CURRENT ON THE CONDUCTOR

Mayes O. Key, Locust Grove, Okla., assignor to Bruce E. Johnson, Tulsa, Okla., a part interest

Filed Oct. 8, 1969, Ser. No. 864,669
Int. Cl. G01d *19/16, 31/08*
U.S. Cl. 324—66 **2 Claims**

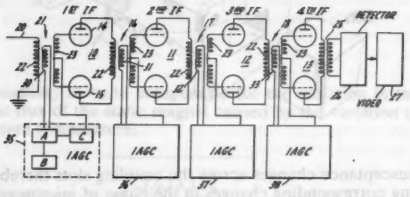


A method of locating a particular electrical conductor among a plurality of electrical conductors from a remote location comprises applying a pulsing current to each of said conductors in turn, and identifying the particular electrical conductor by measuring the pulsing current with a clamp-on ammeter. If certain of the electrical conductors are "live," the ammeter will identify them by their steady current, and if other of the conductors show no current flowing, the operator knows that they are not the ones sought. The pulsing current is applied to the conductor by means of an apparatus having a synchronous motor operating against a cam member which in turn operates a make and break switch to impress a pulsing current of known amplitude to the conductor, which is subsequently identified by a clamp-on ammeter.

3,623,143
ANTIJAM RECEIVER OF WIDE DYNAMIC RANGE UTILIZING IAGC ACTION FOR CLOSELY PACKED PULSES

Joseph F. Marshall, Woburn, Mass., assignor to The United States of America as represented by the Secretary of the Navy

Filed Feb. 15, 1963, Ser. No. 258,930
Int. Cl. H04b 1/16; H03g 3/20
U.S. Cl. 325—326 11 Claims

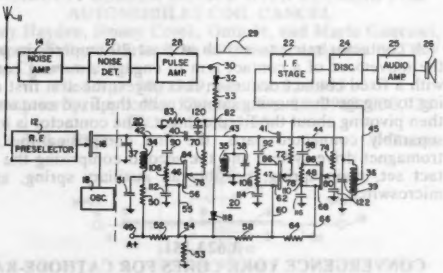


1. An instantaneous automatic gain control circuit of a radio frequency receiver having a plurality of intermediate frequency amplifier stages coupled in sequence by transformers the secondaries of which transformers are center tapped, comprising:
a sampling secondary winding in flux relation with selected intermediately frequency transformers;
a threshold control voltage coupled to one terminal lead of one of the sampling secondary windings to establish a bias in said winding; and
a slow back biasing network and an instantaneous back biasing network coupled in parallel between the other terminal lead of said one sampling secondary winding and the center tap of the secondary in flux relation with said one of the sampling secondary windings whereby the intermediate frequency amplifier stages having jamming signals of unwanted high amplitude applied thereto will be instantaneously back biased in the forward direction to avoid saturation of the forward intermediate frequency amplifier stages.

3,623,144
IMPULSE NOISE-BLANKING SYSTEM EMPLOYING FIELD EFFECT TRANSISTORS

Burton J. Fischel, Glenview, and Frank J. Cerny, Jr., Riverside, both of Ill., assignors to Motorola, Inc., Franklin Park, Ill.

Filed May 13, 1970, Ser. No. 36,717
Int. Cl. H04b 1/10
U.S. Cl. 325—478 10 Claims

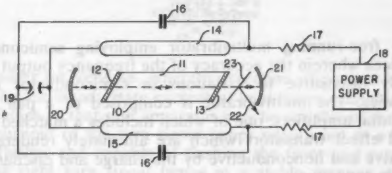


The blanking system, for grounding the signal path of a receiver during the existence of impulse noise, includes field effect transistor blanking elements connected across the sections of a Butterworth filter located in the signal path. The field effect transistors are biased so that they produce virtually no blanking pulse injection, switching transient insertion or intermodulation between undesired signals. Thus, there need not be as much selectivity in the stages of the receiver preceding the blanker thereby facilitating an increase in the blanking rate of the blanker as compared to blankers utilizing bipolar transistors or diode-blanking elements. In addition, the blanking system includes desensitizing circuitry for reducing saturation of the noise detector otherwise caused by radio frequency signals occurring in the noise-sampling channel.

3,623,145
HIGH-ENERGY CHEMICAL LASER SYSTEM

David W. Gregg, Lafayette, and Richard K. Pearson, Pleasanton, both of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed May 26, 1970, Ser. No. 40,653
Int. Cl. H01s 3/22
U.S. Cl. 331—94.5 10 Claims

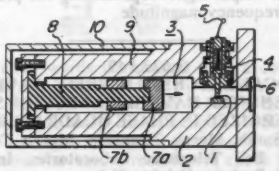


A high-energy chemical laser system wherein explosive gaseous mixtures of a reducing agent providing hydrogen isotopes and nitrogen-fluorine compounds are uniformly ignited by means of flash-photolysis or an electron beam. The resulting chemical explosion pumps a lasing chemical species, hydrogen, deuterium or tritium fluoride which is formed in the chemical reaction. The generated lasing pulse has light frequencies in the 3-micron range. Suitable nitrogen-fluorine gaseous compounds include tetrafluorohydrazine (N_2F_4), nitrogen-trifluoride (NF_3) difluorodiazine (N_2F_2), and suitable reducing agents including hydrogen (H_2) deuterium (D_2), tritium (T_2) diforane (B_2H_6) pentaborane (B_5H_9) and methane (CH_4), as well as combinations of the gaseous compound and/or molecular mixtures of the reducing agent.

3,623,146
TEMPERATURE COMPENSATED CAVITY FOR A SOLID-STATE OSCILLATOR

Yoichi Kaneko, Kokubunji-shi, and Kenzi Sekine, Hachioji-shi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 23, 1969, Ser. No. 827,275
Claims priority, application Japan, May 29, 1968, 43/36069
July 17, 1968, 43/50300
Int. Cl. H03b 3/04, 7/14
U.S. Cl. 331—96 1 Claim



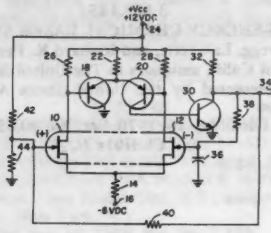
A temperature-compensating device for a solid-state oscillator, wherein a part of the conductive walls constituting a cavity resonator is formed by a movable plate, the movable plate is fixed to one end of a dielectric rod with a high coefficient of linear expansion, and the other end of said rod is fixed to an extension of said cavity resonator.

3,623,147

PRECISION ASTABLE MULTIVIBRATOR

Ronald C. Scheerer, Baltimore, and Seymour J. Rogal, New Carrollton, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 5, 1970, Ser. No. 43,720
Int. Cl. H03k 3/282
U.S. Cl. 331—113 11 Claims



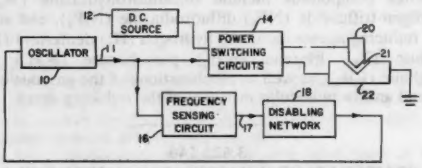
A free-running multivibrator employing semiconductive devices wherein the accuracy of the frequency output is relatively insensitive to variations in semiconductor characteristics. The multivibrator is comprised of a pair of differential amplifiers, one of which includes a matched pair of field effect transistors which are alternately rendered conductive and nonconductive by the charge and discharge of a single capacitor.

3,623,148

APPARATUS FOR SENSING THE FREQUENCY OF MACHINING PULSES FROM AN EDM POWER SUPPLY

Philip E. Berghausen, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed July 13, 1970, Ser. No. 54,102
Int. Cl. B23k 9/10
U.S. Cl. 331—172 2 Claims



An apparatus for monitoring the frequency of output pulses from an EDM power supply and terminating the operation of the supply when the output pulse frequency exceeds a predetermined magnitude. The apparatus comprises a frequency sensing circuit that produces an output signal having a magnitude that is a function of the output pulse frequency. A switching network is connected to the sensing circuit and terminates the operation of the power supply in response to an output signal representing the predetermined output pulse frequency magnitude.

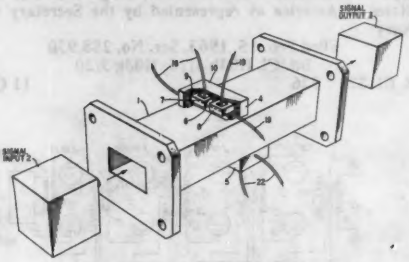
3,623,149

RECIPROCAL LATCHING FERRITE WAVEGUIDE PHASE SHIFTER HAVING WAVEGUIDE STUBS ENERGIZED IN PHASE QUADRATURE

John Ineson Smith, Morris Township, Morris County, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed June 12, 1970, Ser. No. 45,695
Int. Cl. H01p 1/18
U.S. Cl. 333—31 A 7 Claims

A waveguide phase shifter of the loaded line type using latching ferrite material as the active element. The active ferrite material is fabricated in the shape of thin and low-volume toroids which are disposed in pairs in waveguide stubs that are coupled to a main waveguide by coupling slots formed therein. Means are provided for alternatively energizing the toroids into either a symmetrical state or an antisymmetrical state. The changes in impedance and phase constants between these two different states produce



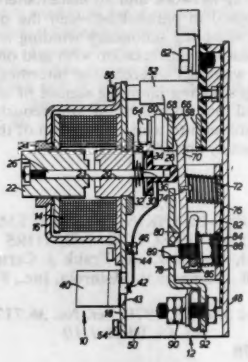
susceptance changes across the coupling slots thereby effecting corresponding changes in the phase of microwave signals propagated over the main waveguide. This phase shift of the signals is reciprocal.

3,623,150

CONTACTOR SWITCH

George Eric Minns, Teddington, England, assignor to Dewhurst and Partner Limited

Filed Jan. 12, 1970, Ser. No. 2,448
Claims priority, application Great Britain, Jan. 20, 1969, 3,230/69
Int. Cl. H01h 3/00
U.S. Cl. 335—192 6 Claims



A contactor rated to switch at least 20 amperes in which the movement of a contact arm to engage a moving contact with a fixed contact occurs in two stages, the arm first moving to engage the moving contact with the fixed contact and then pivoting about the fixed contact. The contactor is in two separably connected parts, the first comprising the electromagnet drive system and the second comprising the contact set, main spring, possibly an auxiliary spring, and a microswitch.

3,623,151

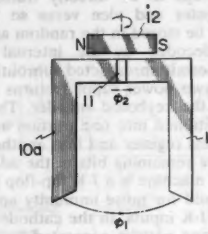
CONVERGENCE YOKE CORES FOR CATHODE-RAY TUBES

Hiroshi Ikeuchi, Yokohama City, Japan, assignor to Denki Onkyo Company, Limited, Tokyo, Japan

Filed July 13, 1970, Ser. No. 54,384
Int. Cl. H01f 1/00
U.S. Cl. 335—212 8 Claims

In a convergence yoke core comprising a pair of L-shaped core members disposed in a U-shaped configuration with their inner ends of shorter legs opposed to each other with a gap therebetween and a static magnet disposed above the

gap, the gap s bridged by a magnetic member having positive thermal expansion coefficient or negative thermal coefficient



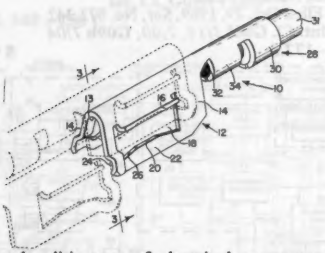
of permeability so as to compensate for the variation in the magnetic flux of the static magnet caused by the variation in the ambient temperature.

3,623,152

HERMOPHRODITIC ELECTRICAL CONNECTOR

Charles E. Gutshall, Schaumburg, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Dec. 29, 1969, Ser. No. 888,634
Int. Cl. H01r *25/00*
U.S. Cl. 339—47 R **3 Claims**



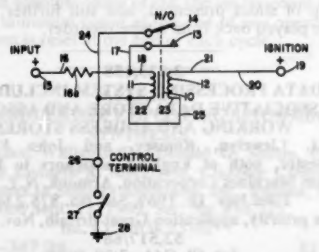
Hermophroditic type of electrical connector is generally tent shaped and provided with outwardly extending contact flanges on its sidewalls. The sidewalls cooperate with the apex to form a symmetrical channellike member, the shape of which permits two or more connectors to be assembled in a stack in snap-in and snap-off relationship by axial sliding engagement of the contact flanges with longitudinal cam surfaces formed on the walls and the exertion of force compatible with the thickness of the material from which the connector is formed.

3,623,153

ON-CIRCUIT BUZZER DEVICE WITH BUCKING FOR AUTOMOBILES COIL CANCEL

Rodney Hayden, Stoney Creek, Ontario, and Mario Guarasci, Niagara Falls, Ontario, both of Canada, assignors to TRW Inc., Cleveland, Ohio

Filed Apr. 29, 1969, Ser. No. 820,095
Claims priority, application Canada, Dec. 26, 1968, 038,724
Int. Cl. B60q *5/00*
U.S. Cl. 340—52 D **2 Claims**



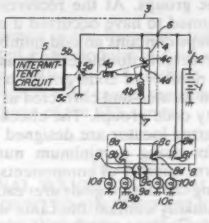
This is an on-circuit buzzer device for automotive use which utilizes a pair of coils in electrical bucking arrangement to operate a buzzer when certain conditions are met. The device uses the bucking arrangement as a cancelling means.

3,623,154

FLASHER CIRCUIT FOR VEHICLES

Hisashi Yonezu, Chita-gun, Aichi-ken, Japan, assignor to Nippon Denso Company Limited, Kariya-shi, Japan

Filed Aug. 7, 1968, Ser. No. 750,878
Claims priority, application Japan, June 13, 1968, 43/40789
Int. Cl. B60q *1/38*
U.S. Cl. 340—81 **9 Claims**



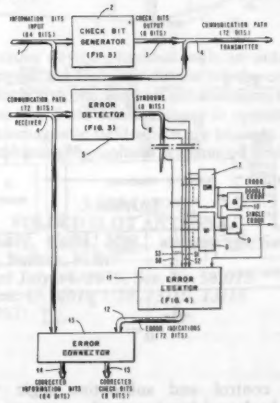
A flasher for vehicles, wherein detection of current is effected by the steady state current of load lamps such as turn signal lamps so that said apparatus may be capable of detecting a burnout of the turn signal lamps when used as a turn signal flasher and capable of flashing the front and rear or left and right turn signal lamps in a stable manner at an adequate frequency when used as a hazard warning flasher.

3,623,155

OPTIMUM APPARATUS AND METHOD FOR CHECK BIT GENERATION AND ERROR DETECTION, LOCATION AND CORRECTION

Mu-Yue Hsiao, Poughkeepsie, and Eugene Kolankowsky, Pleasant Valley, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1969, Ser. No. 887,858
Int. Cl. G06f *11/10*
U.S. Cl. 340—146.1 **20 Claims**



Errors in code words transmitted over a communication path are detected and corrected by optimum apparatus at transmitting and receiving ends of the path. Illustratively, a 72 bit parallel code word, comprising a 64 bit information portion and an eight bit check portion is communicated between a transmitter and a receiver. A check bit generator at the transmitter generates eight check bits as a function of the 64 information bits, each check bit being associated with a number of information bits (a check bit and its associated information bits forming a "code group"). The information bits and check bits are communicated to the receiver where an error detector compares check bits generated from the received information bits with the received check bits and an error locator analyzes any mismatch to determine the location of an error. An error corrector then corrects any infor-

mation or check bit which is identified as incorrect by the error locator. The check bit generator at the transmitter supplies signals, at outputs corresponding to the check bits, by Exclusive ORing the information bits in its code group, in accordance with a single error correction and double error detection (SEC/DED) code. The error detector examines each code group separately by Exclusive ORing both its information and check bits in accordance with the same code and supplies syndrome signals manifesting the result of the examination. Error detection and correction are possible because, upon transmission, each code group contains an even number of bits (even parity), only one of which is a check bit, and each bit of each code word is a member of an odd number of code groups. At the receiver, a single correctable error is assumed to have occurred if an odd number of received code groups contains an odd number of bits (odd parity) and an uncorrectable double error is assumed to have occurred if an even number of code groups have odd parity. Single errors are then located and corrected as an AND function of the odd parity code groups. The check bit generator, error detector and error locator are designed in accordance with a technique for using a minimum number of components and a uniform number of components in each parallel signal path. Among the design goals are: each unique code group should substantially contain the same number of bits, each information bit must be a member of an odd number of code groups greater than one, and each check bit must be a member of a different code group. The number of code groups to which each information bit is assigned is determined by first exhausting the lowest odd number of code group combinations available before going to the next odd number of combinations.

3,623,156

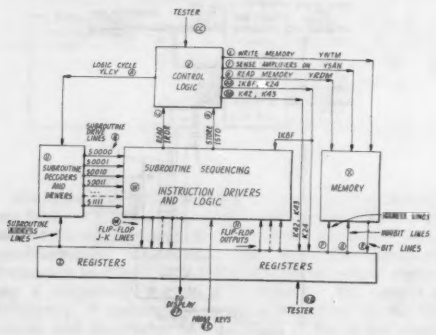
CALCULATOR EMPLOYING MULTIPLE REGISTERS AND FEEDBACK PATHS FOR FLEXIBLE SUBROUTINE CONTROL

Thomas E. Osborne, San Francisco, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Original application June 23, 1966, Ser. No. 559,887, now Patent No. 3,566,160, dated Feb. 23, 1971. Divided and this application May 26, 1969, Ser. No. 827,795

Int. Cl. G06f *9/16*

U.S. Cl. 340—172.5 **29 Claims**



Internal control and subroutine logic transfers data between a keyboard input, a random access memory, and a plurality of flip-flop registers to perform arithmetic operations and transfers the results of these operations to a cathode-ray tube output display. The flip-flop registers include a program register comprising a set of primary flip-flops for designating a subroutine to be performed and a set of secondary flip-flops for sequentially designating a group of one or more instructions to be executed in each state of the designated subroutine. The primary and secondary flip-flops are controlled by multiple feedback paths. Power switching is employed in the internal control and subroutine logic so that the subroutines and instructions are supplied with power only when they are to be executed. The flip-flop registers also include a memory access register for receiving information read from and to be written into the random access memory. When a random access memory cycle is required, it is automatically interposed between the otherwise regularly recurring logic cycles by the internal control and subroutine logic. Separate logic circuits are provided for enabling the state of the secondary flip-flops to be directly transferred to the memory access register and vice versa so that encoded transfer vectors may be stored in the random access memory and subsequently decoded by the internal control and subroutine logic to permit unrestricted subroutine returns. In the keyboard input two power supply returns are employed to define one bit of the keyboard encoder. The random access memory is partitioned into one portion addressed by a single bit in an address register and into another, larger portion addressed by the remaining bits in the address register. Each flip-flop of the machine is a J-K flip-flop provided with an adjustable threshold for noise immunity and with a high internal gain on the J-K inputs. In the cathode-ray tube output display, a recurring pattern generated by integration in only two directions is selectively blanked to display the results of the operations performed by the calculator. A tester may be connected to the machine for allowing all subroutines to be operated in a single step mode. The tester is provided with switches for initializing any internal state of the machine or stopping normal execution under any prescribed conditions and with apparatus for accessing the random access memory.

3,623,157

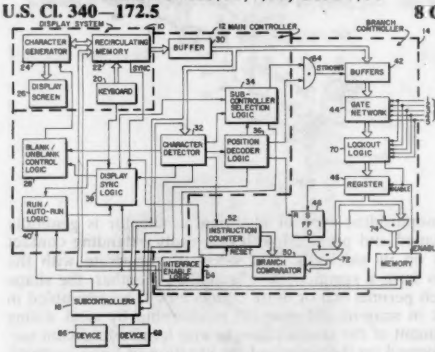
BRANCH CONTROL OF ELECTROMECHANICAL DEVICES AND DISPLAY INFORMATION

Gary N. Stapleford, Nashua, N.H., assignor to Sanders Associates, Inc., Nashau, N.H.

Filed Oct. 29, 1969, Ser. No. 872,342

Int. Cl. G06f *3/14, 7/00;* **G09b** *7/04*

U.S. Cl. 340—172.5 **8 Claims**



Information presented on a display screen is responded to by an operator and dependent on the operator's response the apparatus of the invention branches to another instruction presently available in the display system's recirculating memory or to a full page of instructions stored in an auxiliary memory. The instruction branched to causes information associated with it to be displayed for a further response by the operator and/or causes the main controller of the invention to activate one or more subcontrollers which in turn activate one or more electromechanical devices. For example, a student in response to a question displayed may select one multiple-choice answer. Dependent on this answer he may see further information displayed and in addition a short movie or group of slides presented, and still further, information might be played back from a tape recorder.

3,623,158

DATA PROCESSING SYSTEM INCLUDING NONASSOCIATIVE DATA STORE AND ASSOCIATIVE WORKING AND ADDRESS STORES

Roger J. Llewelyn, Romsey, and John F. Minshull, Winchester, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 10, 1969, Ser. No. 875,234

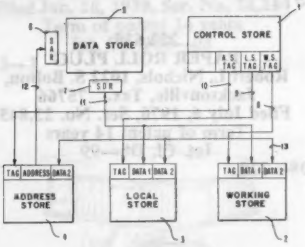
Claims priority, application Great Britain, Nov. 12, 1968, 53,517/68

Int. Cl. G11c *7/00, 9/00*

U.S. Cl. 340—172.5 **12 Claims**

An electronic data processing system comprising a nonassociative data store and four associative stores; a control

store, a working store, a local store and an address store. The address store, under control of the control store, operates



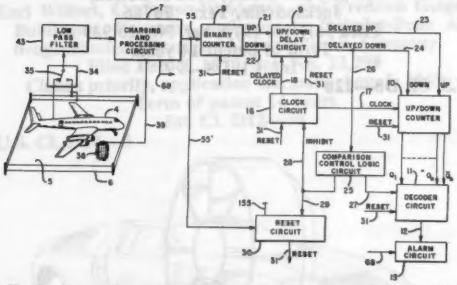
upon address data which is then used to address the data store. The working store and the address store may function simultaneously to provide improved instruction execution.

3,623,159

CAPACITIVE INTRUSION DETECTION SYSTEM

Robert F. Bell; Andrew L. Davis, and James M. Tresidder, Jr., all of Sunnyvale, Calif., assignors to Sylvania Electric Products Inc.

Filed Dec. 11, 1968, Ser. No. 782,928
Int. Cl. G08b *13/26*
U.S. Cl. 340—258 C **30 Claims**



Each time the capacitance of a protected aircraft is charged to a prescribed threshold voltage level by a constant current source, it is discharged and an event or count is recorded in a first counter which automatically resets when it is full to repeat this operation cycle. The presence of an intruder near the aircraft causes its capacitance, and thus the time to fill the first counter, to change. An up/down counter is responsive to the outputs of the first counter and a clock generator for first counting up the number of clock pulses that are produced. When the first counter is half-full, the second counter counts down (subtracts) from the contents thereof the number of clock pulses that are produced prior to reset of the first counter when it is full. A decoder network monitors the remainder count in the up/down counter and initiates an alarm indicating intrusion of the protected aircraft area when the absolute value of the remainder count exceeds a prescribed minimum count at the end of any operation cycle. The system is reset at the end of each cycle.

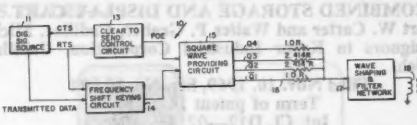
3,623,160

DATA MODULATOR EMPLOYING SINUSOIDAL SYNTHESIS

George R. Giles, Williamsville; Donald G. Shuda, Clarence Center, and Kenneth R. MacDavid, Clarence Center, all of N.Y., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Sept. 17, 1969, Ser. No. 858,721
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **11 Claims**

Multitone data-transmitting apparatus employing sinusoidal synthesis with harmonic cancellation. A multitone data transmitter employs relative phase displacements between plural digital waveforms all of which are representative of a tone to be transmitted and a weighted summing network for summing the plural waveforms so as to cancel un-



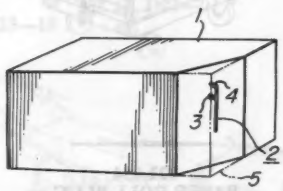
desirable harmonics of the frequency tone to be transmitted. In the illustrated FSK modulator, four square waves having relative phase shifts of $\pi/4$ radians are given suitable summing weights so as to cancel the third and fifth harmonic of any selected one of the FSK tones.

3,623,161

FRACTIONAL WAVELENGTH FOLDED ANTENNA MOUNTED ON PORTABLE RADIO

Kyohei Fujimoto, Yokohama, and Toshio Tatsuzawa, Fujsawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of application Ser. No. 761,267, Sept. 20, 1968, now abandoned. This application Aug. 3, 1970, Ser. No. 60,507. Claims priority, application Japan, Sept. 26, 1967, 42/82798, Dec. 1, 1967, 42/101502, Dec. 4, 1967, 42/103110
Int. Cl. H01q *1/24*
U.S. Cl. 343—702 **10 Claims**



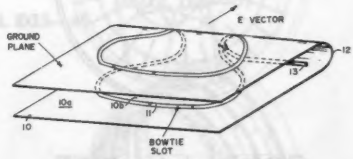
A portable radio device provided with an antenna small sized and not projected from the device for the convenience of handling, which antenna has two polarizations to be made operable almost free from disadvantages in operation due to change in electromagnetic field which are brought about with influences of ambient geographical features or houses.

3,623,162

FOLDED SLOT ANTENNA

Arthur R. Whitty, Hollis, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed July 24, 1970, Ser. No. 58,015
Int. Cl. H01q *1/28, 13/10, 13/16*
U.S. Cl. 343—767 **4 Claims**

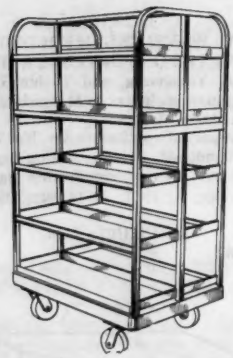


A folded slot antenna comprising a sheet of conductive material folded upon itself and having a bow tie shaped slot arranged symmetrically about the bend of the fold on the surface of the sheet. This antenna structure can be flush mounted, for example, in the leading edge of the horizontal stabilizer or of the dorsal fin of an aircraft.

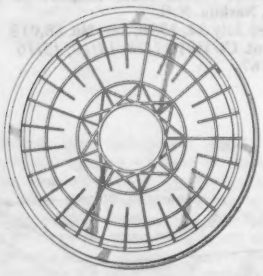
DESIGNS

NOVEMBER 23, 1971

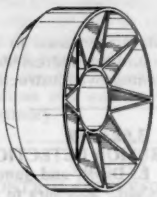
222,633
COMBINED STORAGE AND DISPLAY CART
Robert W. Carter and Walter P. Graber, Cadillac, Mich., assignors to Kysor Industrial Corporation, Cadillac, Mich.
Filed Nov. 10, 1969, Ser. No. 20,004
Term of patent 14 years
Int. Cl. D12—*02;* D6—*04*
U.S. Cl. D14—3



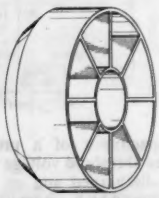
222,634
PAPER ROLL PLUG
Robert L. Nichols, 1022 S. Bolton, Jacksonville, Tex. 75766
Filed June 24, 1970, Ser. No. 23,655
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



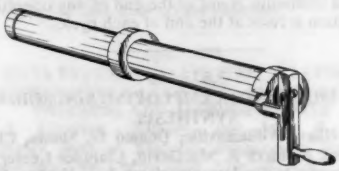
222,635
PAPER ROLL PLUG
Robert L. Nichols, 1022 S. Bolton, Jacksonville, Tex. 75766
Filed July 6, 1970, Ser. No. 23,845
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220



222,636
PAPER ROLL PLUG
Robert L. Nichols, 1022 S. Bolton, Jacksonville, Tex. 75766
Filed July 13, 1970, Ser. No. 23,939
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—220

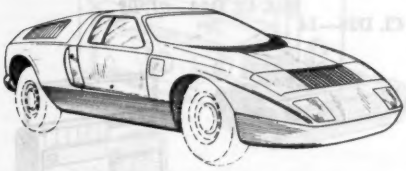


222,637
KITE CONTROL
Vivian S. Becker, 1197½ N. Oregon St., Ontario, Oreg. 97914
Filed Feb. 9, 1970, Ser. No. 21,348
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—222



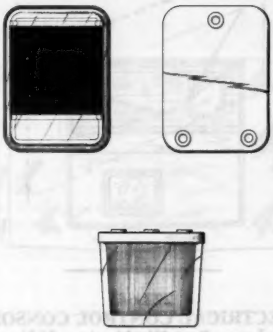
222,638
RESIDENTIAL DWELLING
Paul V. Frakes, Williamsport, Pa., assignor to The Gazer Corporation, Williamsport, Pa.
Filed Jan. 28, 1970, Ser. No. 21,124
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1

222,639
AUTOMOBILE BODY
Karl Wilfert, Gerlingen-Waldstadt, and Fredrich Geiger, Boblingen, Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany
Filed Feb. 5, 1970, Ser. No. 21,298
Claims priority, application Germany Aug. 5, 1969
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D14—3

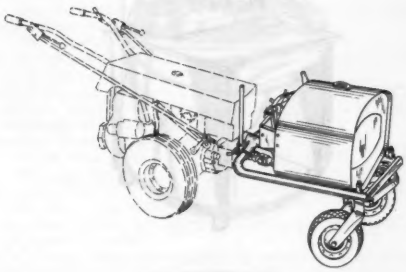


222,640
FISHING LINE CLIP
Herbert J. Mayer, 1153 Chevy Chase Drive, Anaheim, Calif. 92805
Filed June 18, 1970, Ser. No. 23,551
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—25

222,641
DISPOSABLE LIQUID FILTER CARTRIDGE
Vernon D. Roosa, % Standadyne Inc., P.O. Box 1440, West Hartford, Conn. 06101
Filed June 15, 1970, Ser. No. 23,490
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

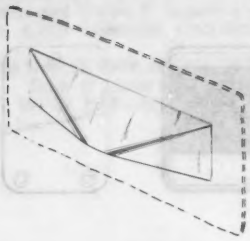


222,642
TRAILER MOUNTED SPRAYER UNIT
Roy F. Broyhill, Dakota City, Nebr. 68731
Filed July 10, 1970, Ser. No. 23,905
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18

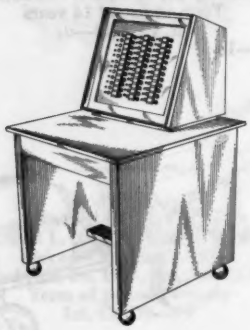


222,643
CORRUGATED TUBING
Ronald C. Martin, Waterville, Ohio, and Marty E. Sixt, Iowa City, Iowa, assignors to Advanced Drainage Systems, Inc., Waterville, Ohio
Filed Apr. 3, 1970, Ser. No. 22,231
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—45

222,644
LOUVER
Joseph Veneziano, 1982 Staunton Road, Cleveland Heights, Ohio 44118
Filed May 13, 1970, Ser. No. 22,951
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—115

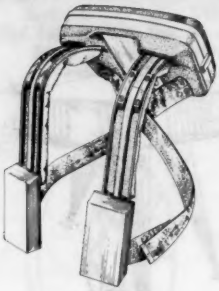


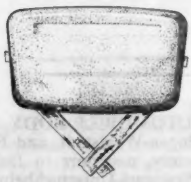
222,645
ELECTRICAL CONTROL CONSOLE
Paul V. De Luca, Port Washington, N.Y., assignor to Porta Systems Corp., Port Washington, N.Y.
Filed June 9, 1970, Ser. No. 23,391
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5



222,646
LAMP
Joseph R. Clark, Jr., 5501 N. 27th Drive, Phoenix, Ariz. 85017
Filed June 11, 1970, Ser. No. 23,442
Term of patent 14 years
Int. Cl. D26—*04*
U.S. Cl. D26—8

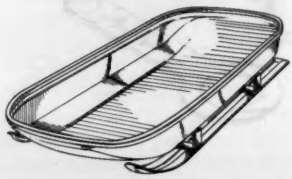
222,647
BACKPACK TRANSMITTER OR SIMILAR ARTICLE
Cornelius T. de Kam, Edgewood, Pa., assignor to Westinghouse Air Brake Company, Swissvale, Pa.
Filed Oct. 28, 1969, Ser. No. 19,768
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14



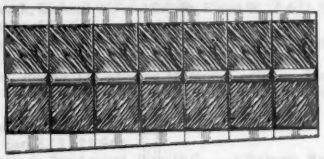


222,648
TAPE RECORDER
Isao Aburatani and Yoshihiko Ohyama, Tokyo, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed May 26, 1970, Ser. No. 23,156
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D26—14

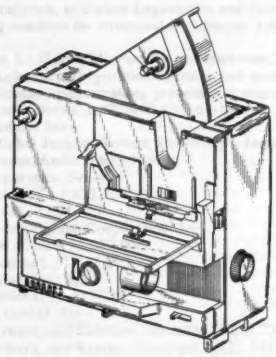
222,649
SLED
Yves Anselme Lapointe and Jerome Bombardier, Valcourt, Quebec, Canada, assignors to Bombardier Limited, Valcourt, Quebec, Canada
Filed May 19, 1970, Ser. No. 23,061
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—15



222,650
EXPANSIBLE LINK CHAIN FOR A BRACELET OR SIMILAR ARTICLE
Murray L. Cowan, Norwood, Mass., assignor to Textron Inc., Providence, R.I.
Filed July 16, 1970, Ser. No. 23,980
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—4

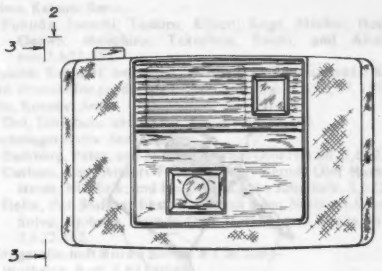


222,651
COMBINED MOTION PICTURE PROJECTOR AND CARRYING CASE THEREFOR
Dianne B. Ainslie, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 23, 1970, Ser. No. 22,828
Term of patent 14 years
Int. Cl. D16—*02*
U.S. Cl. D61—1

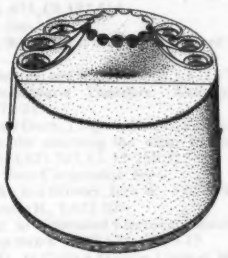


222,652
MAIL BOX COVER
Thomas J. Kinskey, 95 Woodside Drive, Washington, Pa. 15301
Filed May 21, 1969, Ser. No. 17,261
Term of patent 14 years
Int. Cl. D31
U.S. Cl. D74—9

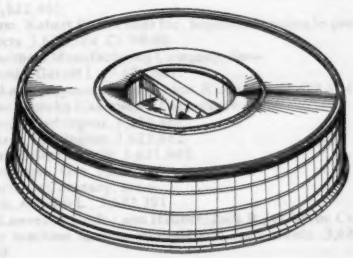
222,653
CAMERA
Ronald A. Emmerling, Montvale, N.J., assignor to Atlas-Rand Corporation, Parmus, N.J.
Filed June 29, 1970, Ser. No. 23,730
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1



222,654
ILLUMINABLE TOY VANITY KIT
Robert L. Lindsay, Hamilton, Ohio, assignor to Kenner Products Company, Cincinnati, Ohio
Filed May 6, 1970, Ser. No. 22,829
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D86—10



222,655
COMBINED CONTAINER AND DISCS
Charles T. Inatomi, Culver City, and Jackson R. Iblings, Manhattan Beach, Calif., assignors to The National Cash Register Company, Dayton, Ohio
Filed July 7, 1969, Ser. No. 18,067
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1



222,656
COMBINED MUSIC BOX AND TOTE BOX OR THE LIKE
Ernest L. Thornell, Horicon, Wis., assignor to Marlin Toy Products Inc.
Filed Mar. 2, 1970, Ser. No. 21,691
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—1

222,657
RACKET
Peter A. Latham, Newburyport, and Paul E. Brefka, Framingham, Mass. (both of 39 Commercial Wharf, Boston, Mass. 02110)
Filed Feb. 5, 1969, Ser. No. 15,632
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23D DAY OF NOVEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-T-O Inc.: *See—*
Coolbaugh, Richard W.; and Engels, Floyd W., 3,621,595.

A-Z International Tool Company: *See—*
Sanford, Lawrence; Medders, Weldon; and Chadderdon, Jack, 3,621,910.

Abela, Shibly Joseph, to Canadian Marconi Company. Electronic circuit for converting DC to AC analogue signals. 3,622,800, Cl. 307-229.

Abex Corporation: *See—*
Frank, Earl E., 3,621,943.

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Branchesi, Millo, to Montecantini Edison S.p.A. Textile fibers, films, shaped articles and the like particularly stable to heat, light and ageing. 3,633,530, Cl. 260-23.

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Lemieux, Raymond Urgel; Raap, Rintje; Chin, Clinton Gordon; and Micetich, Ronald George, to R & L Molecular Research Ltd. 6-(Aryl-3-azido-and 3-amino-methyl-isocrotonamido) pencililanic acids. 3,622,569, Cl. 260-239.1

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Leroi, Eugene; Beaufour, Albert; and Beaufour, Gerard, to Societe d'Etudes de Produits Chimiques. Synergistic mixture of 5-methyl 7-bromo 8-hydroxy quinoline and N-dodecyl sulphate of 5-methyl 8-hydroxy quinoline. 3,622,672, Cl. 424-258.

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Loukes, David Gordon; Robinson, Albert Sidney; and Lawrenson, Jack, to Pilkington Brothers Limited. Method and apparatus for producing coated flat glass. 3,622,294, Cl. 65-30.

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Mainwaring, Albert Bruce, to Uniform Tubes, Inc. Non-trepanning non-rotary electrode for electro-erosion of metals. 3,622,735, Cl. 219-69.

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Ulm, Ernest S., to NRM Corporation. Post cure inflator. 3,621,521, Cl. 18-2.

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Lovell, Ronald E., Jr. 892,012.

Edwards, Donald W. Process of making laminated roll. 892,-013, 11–23–71, Cl. D29—148.4.

Erickson, Stephen C., and J. N. Reding, to The Dow Chemical Co. Method of reducing melt loss in die casting magnesium base alloys. 892,017, 11–23–71, Cl. 164—72.

Firestone Tire & Rubber Co., The: *See*—
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Gustafson, Gary B., and Gnage. 892,011.

Gormel, Thomas M. Method for preparing thallous ethoxide. 892,007, 11–23–71, Cl. 260—429.

Gustafson, Gary B., and O. W. Gnage. Method and apparatus for cleaning photosensitive elements. 892,011, 11–23–71. Cl. 134—6.

Hagemeyer, Hugh J., Jr., and R. E. Bissell, Polyethylene waxes and preparation thereof. 892,004, 11–23–71, Cl. 106—271.

Heidecker, Robert F., to International Business Machines Corp. Digital phase scaler. 892,009, 11–23–71, Cl. 235—156.

Hollander, Edward R., Jr. Preparation of plastic containers having a high degree of resistance to vapor transmission. 892,016, 11–23–71, Cl. 117—94.

Ibach, William F., to E. I. du Pont de Nemours and Co. Disperse acid and vat or sulfur dyeing of polyester-polyamide blend in a polyester-cellulose blend using dry heat and fabric so dyed. 892,008, 11–23–71, Cl. 8—15.

International Business Machines Corp.: *See*—
Heidecker, Robert F. 892,009.

Kern, William J.: *See*—
Schroeder, Ervin E., and Kern. 892,014.

Laakso, Thomas M. and J. L. R. Williams. Photosensitive polymers. 892,006, 11–23–71, Cl. 96—115.

Larins, Thomas H., Jr. Modacrylic fibers of reduced flammability. 892,010, 11–23–71, Cl. 260—897.

Lovell, Ronald E., Jr., to E. I. du Pont de Nemours and Co. Process for making napped sponge structures. 892,012, 11–23–71, Cl. 264—188.

McCullough, John F.: *See*—
Sheridan, Richard C., and McCullough. 892,015.

Peace, Robert G., and C. G. Chandler. Method and mechanism for machining hinges in plastic sheeting. 892,003, 11–23–71, Cl. 83—5.

Reding, John N.: *See*—
Erickson, Stephen C., and Reding. 892,017.

Scheib, Robin M., and R. D. Thrasher. Clarification of concentrated wet-process phosphoric acid. 892,005, 11–23–71, Cl. 23—165.

Schroeder, Ervin E., and W. J. Kern, to The Firestone Tire & Rubber Co. Method for the preparation of impact polystyrenes. 892,014, 11–23–71, Cl. 260—880.

Schumacher, Ignatius: *See*—
Baker, Joseph W., and Schumacher. 892,001.

Seever, Larry E., to E. I. du Pont de Nemours and Co. Coating thickness regulator. 892,002, 11–23–71, Cl. 118—63.

Sheridan, Richard C., and J. F. McCullough. Potassium ammonium polyphosphates. 892,015, 11–23–71, Cl. 23—106.

Thrasher, Raymond D.: *See*—
Scheib, Robin M., and Thrasher. 892,005.

Williams, Jack L. R.: *See*—
Laakso, Thomas M., and Williams. 892,006.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 23RD DAY OF NOVEMBER, 1971

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Fisons Ltd.: *See*—
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London, Eric, and G. D. Twigg, to Fisons Ltd. Therapeutic preparations of iron. Re. 27,240, 11–23–71, Cl. 424—180.

Lynch, Charles S.: *See*—
Stansbury, Robert L., Lynch, and Sor. Re. 27,238.

Pope, Richard D., Jr., and S. L. Faught, to Cypress Gardens Skis, Inc. Tracking ski. Re. 27,235, 11–23–71, Cl. 9—310.

Shapland, James T., to United States Steel Corp. Refractory closure member for bottom pour vessels. Re. 27,237, 11–23–71, Cl. 222—512.

Sor, Kamil: *See*—
Stansbury, Robert L., Lynch, and Sor. Re. 27,238.

Stansbury, Robert L., C. S. Lynch, and K. Sor, to Esso Research and Engineering Co. Method of preparing slow release fertilizer compositions. Re. 27,238, 11–23–71, Cl. 71—27.

Twigg, George D.: *See*—
London, Eric, and Twigg. Re. 27,240.

Ulrich, Werner, to Bell Telephone Laboratories, Inc. Memory system. Re. 27,239, 11–23–71, Cl. 340—172.5.

United States Steel Corp.: *See*—
Shapland, James T. Re. 27,237.

Wight, Ralph H., to Fairchild Camera and Instrument Corp. Optical systems for panoramic cameras. Re. 27,236, 11–23–71, Cl. 95—16.

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Aburatani, Isao, and Y. Ohyama, to Hitachi, Ltd. Tape Recorder. 222,648, 11–23–71, Cl. D26—14.

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Becker, Vivian S. Kite control. 222,637, 11–23–71, Cl. D8—222.

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Broyhill, Roy F. Trailer mounted sprayer unit. 222,642, 11–23–71. Cl. D23—18.

Carter, Robert W., and W. P. Graber,to Kysor Industrial Corp. Combined storage and display cart. 222,633, 11–23–71, Cl. D14—3.

Clark, Joseph R., Jr. Lamp. 222,646, 11–23–71, Cl. D26—8.

Cowan, Murray L., to Textron Inc. Expansible link chain for a bracelet or similar article. 222,650, 11–23–71, Cl. D45—4.

Daimler-Benz Aktiengesellschaft: *See*—
Wilfert, Karl, and Geiger. 222,639.

DeKam, Cornelius T., to Westinghouse Air Brake Co. Back pack transmitter or similar article. 222,647, 11–23–71, Cl. D26—14.

DeLuca, Paul V., to Porta Systems Corp. Electrical control console. 222,645, 11–23–71, Cl. D26—5.

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Ainslie, Dianne B. 222,651.

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Latham, Peter A., and P. E. Brefka. Racket. 222,657, 11–23–71, Cl. D34—5.
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Inatomi, Charles T., and Iblings. 222,655.
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